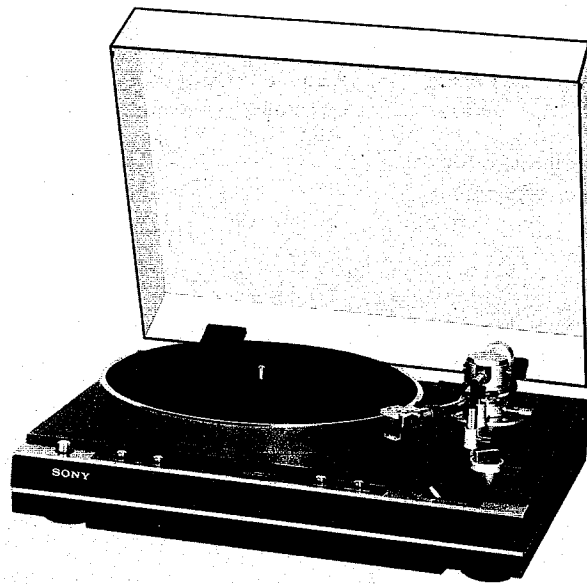


PS-X60

*US Model
Canadian Model
AEP Model
UK Model
E Model*



STEREO TURNTABLE SYSTEM

SPECIFICATIONS

GENERAL

Power Requirements: 120, 220 V ac, 50/60 Hz (AEP, E model)
220, 240 V ac, 50/60 Hz (UK model)
120 V ac, 60 Hz (US, Canadian model)

Power Consumption: 8W (US, Canadian model)
12W (AEP, E, UK model)

Dimensions: 480 (w) x 165 (h) x 420 (d) mm
18⁷/₈ (w) x 6¹/₂ (h) x 16¹/₂ (d) inches
including projecting parts and controls

Weight: Approx. 12 kg, 26 lb 7 oz (net)
Approx. 13.3 kg, 29 lb 5 oz
(in shipping carton)

TURNTABLE

Platter: 32 cm (12⁵/₈ inches), diecasting
aluminum alloy

Motor: DC servo-controlled linear BSL motor

Drive System: Direct drive, crystal lock control
system

Speeds: 33¹/₃, 45 rpm.

Starting Characteristics: Comes to nominal speed within a half
revolution (33¹/₃ rpm)

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

S/N Ratio: 75 dB (DIN-B)

Initial Drift: Within 0.0003 %

Load Characteristics: 0 % up to 150 g tracking force

Automatic System: Lead-in, return, reject, repeat

TONARM

Type: Statically balanced, universal

Arm Length: 330 mm (13 inches), overall
235 mm (9¹/₄ inches), pivot-to-stylus

Overhang: 14 mm (9/₁₆ inches)

Tracking Error: +2° 27', -1° 30'

**Tracking-force Adjustment
Range:** 0 — 2.5 g

Shell Weight: 11 g

Cartridge Weight Range: 11.0 — 19.5 g
(including shell) (19.0 — 27.5 g with extra weight)

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND  MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS 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.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ !

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  SUR LES DIAGRAMMES SCHEMATIQUES, LES VUES EXPLODÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY.

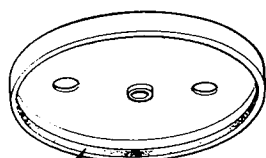
SONY®

SERVICE MANUAL

SERVICING NOTE

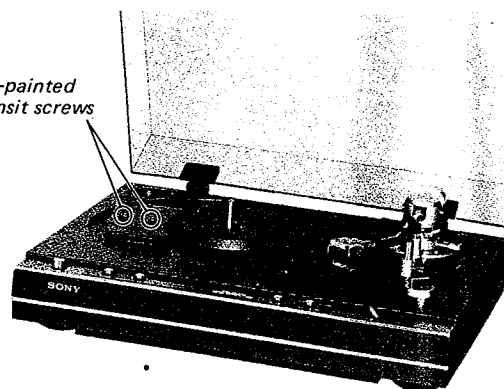
1. Wait a few minutes after the power switch is turned on.
2. When replacing the lamp of automatic-return detection, make the automatic-return adjustment (page 13).
3. Platter handling.
4. When operating the set, confirm that the transit screws are removed.

Bottom view of platter



Be sure not to spoil the magnetic coating (dark brown color).

red-painted transit screws



MODEL IDENTIFICATION

— Specification Label —

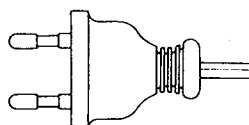
(US, Canadian model)

SONY	STEREO TURNTABLE SYSTEM		
	MODEL NO, PS-X60		
	AC 120V	60Hz	8W
	SERIAL NO. MADE IN JAPAN		

— Power Cord —

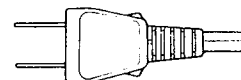
E1 model: euro-plug

1-551-530-00



E2 model: parallel-blade plug

1-534-487-XX



(AEP, E1 and E2 model)

SONY	STEREO TURNTABLE SYSTEM		
	MODEL NO, PS-X60		
	~120, 220V 50/60Hz 12W		
	SERIAL NO. MADE IN JAPAN		



(UK model)

SONY	STEREO TURNTABLE SYSTEM		
	MODEL NO, PS-X60		
	~220, 240V 50/60Hz 12W		
	SERIAL NO. MADE IN JAPAN		



STEREO TURNTABLE SYSTEM

PS-X60

*US Model
Canadian Model
AEP Model
UK Model
E Model*

CORRECTION

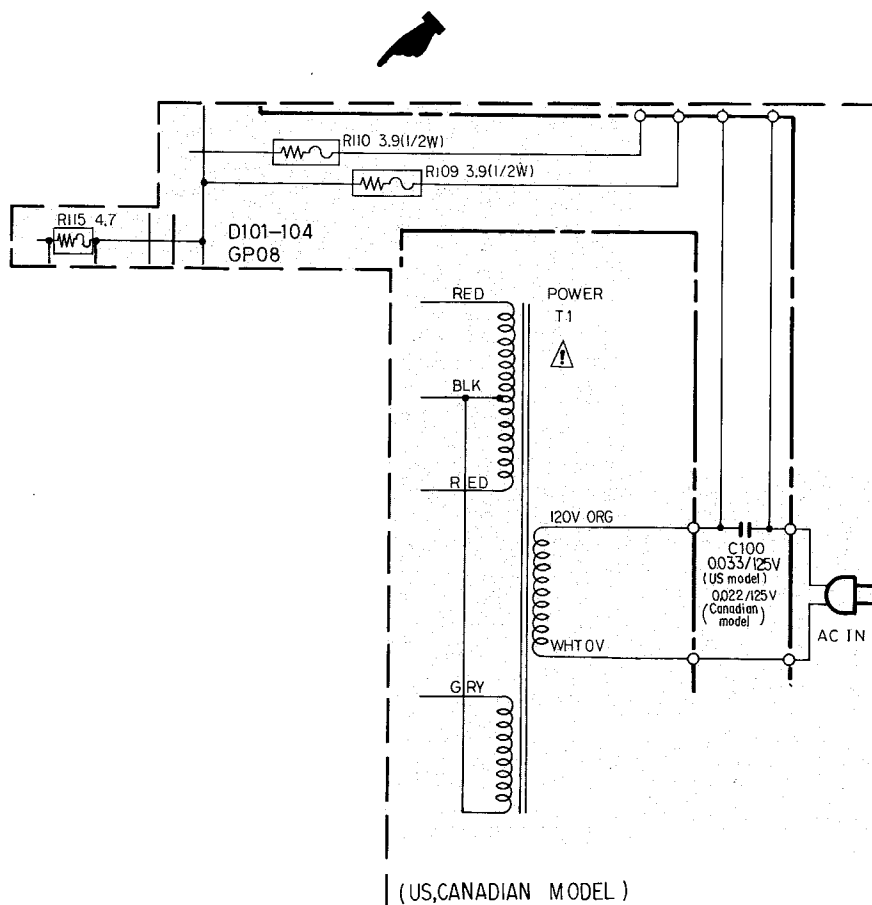


: Corrected Portion. Correct the service manual as shown below.

No. 1

January, 1979

Page 18



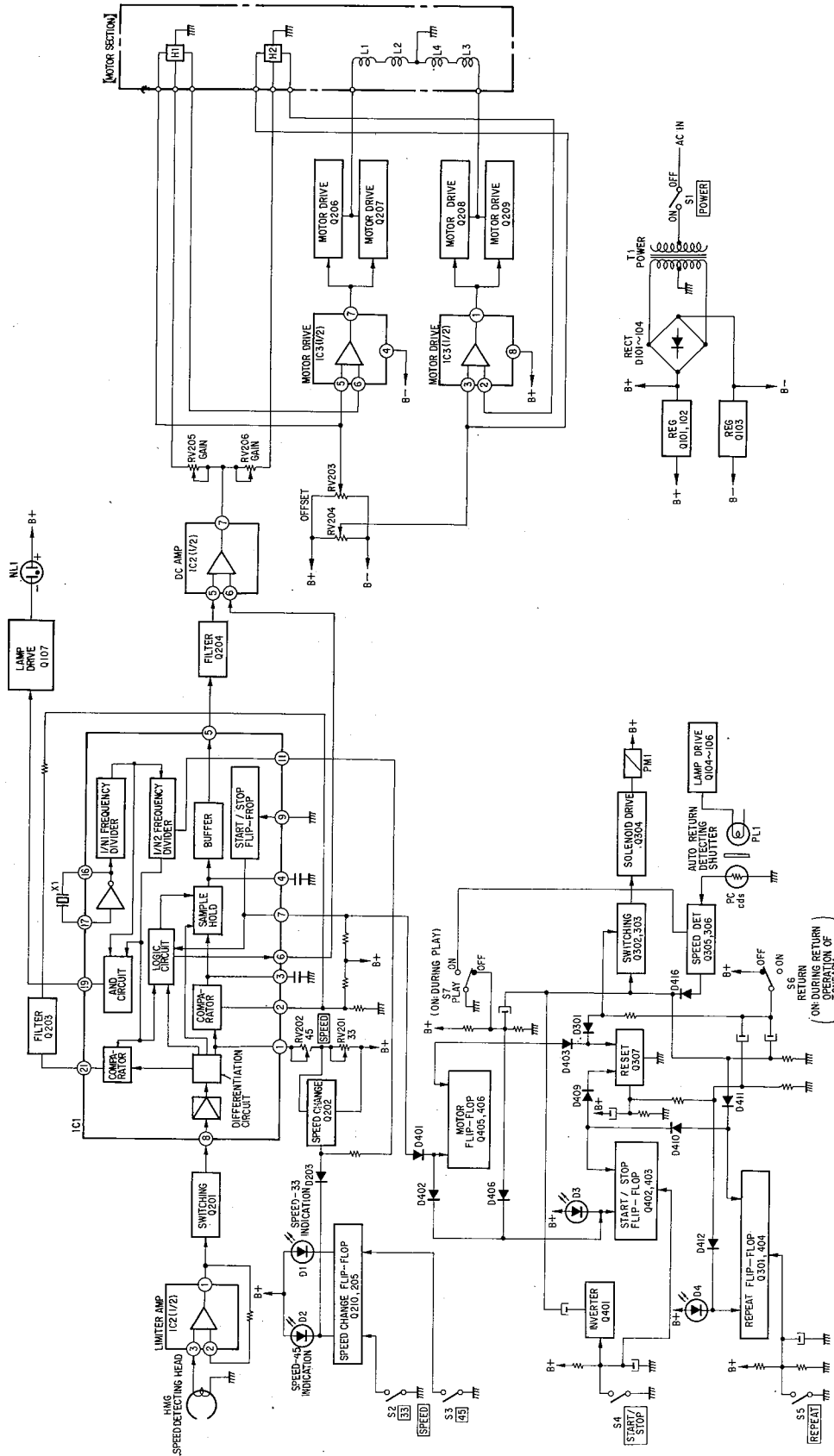
SONY®

SERVICE MANUAL

SECTION 1

OUTLINE

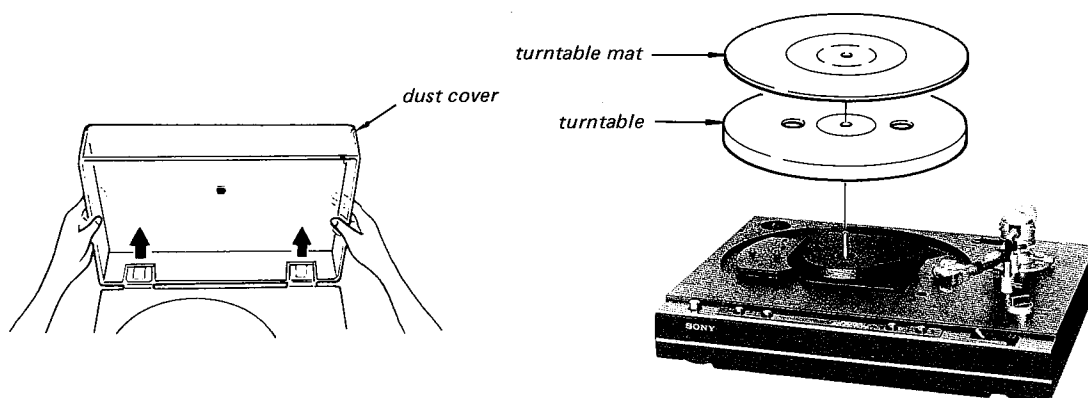
1. BLOCK DIAGRAM



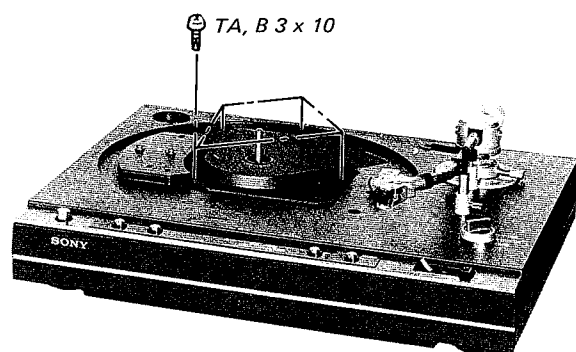
SECTION 2 DISASSEMBLY

- Follow the disassembly or the installation procedure in the numerical order given.

Dust Cover, Turntable Mat and Turntable Removal

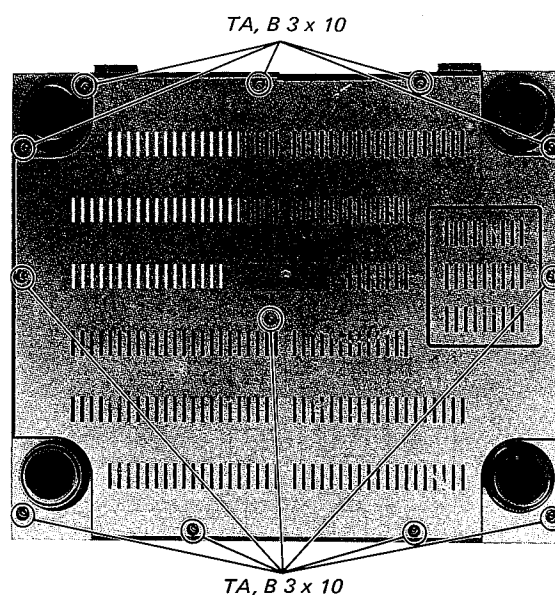


Top Cover Removal



After this removal, drive gear, miniature switch (S6) and solenoid (PM) can be replaced.
(See page 7.)

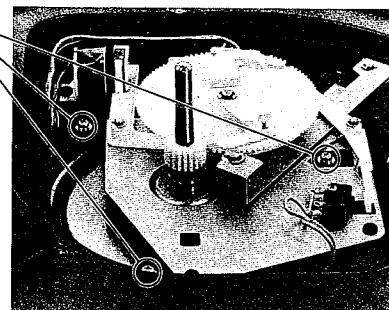
Bottom Plate Removal



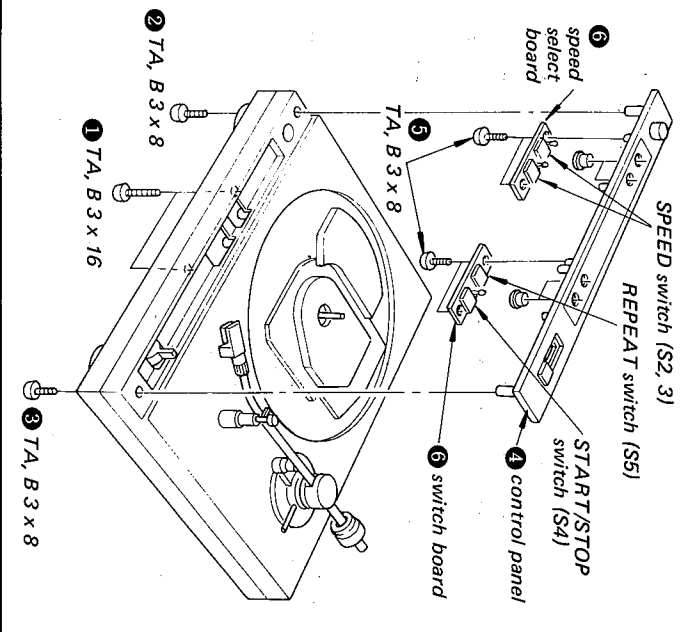
Motor Removal

1. Disconnect the motor lead-wires from the servo amp/system control board.
2. Remove the three screws (PSW 3 x 12).
3. Remove the motor.

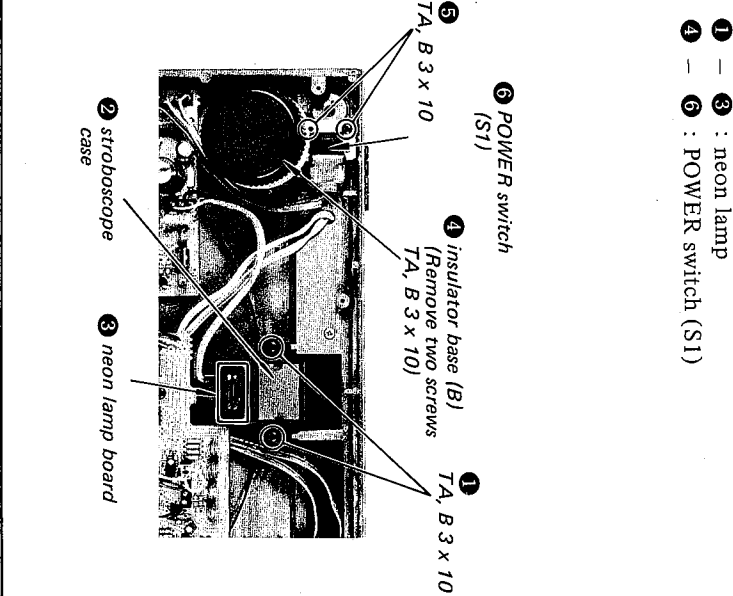
PSW 3 x 12



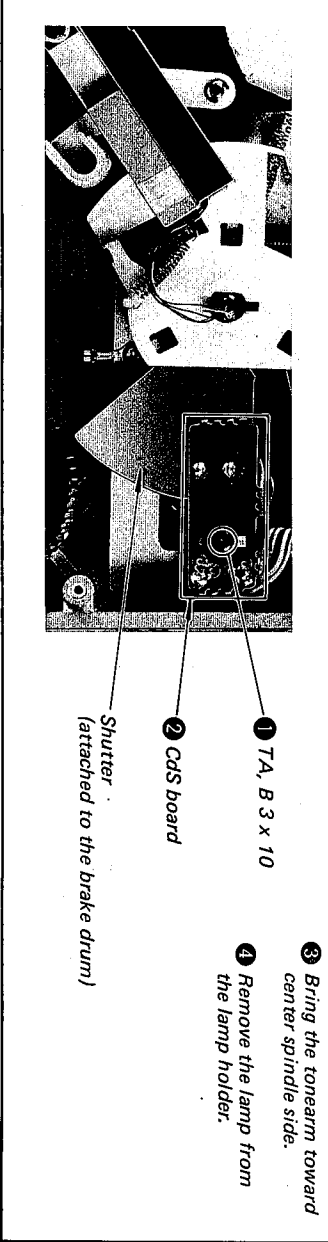
SPEED Switch (S2, 3), START/STOP Switch (S4) and REPEAT Switch (S5) Removal



Neon Lamp (NL1) and POWER Switch (S1) Removal

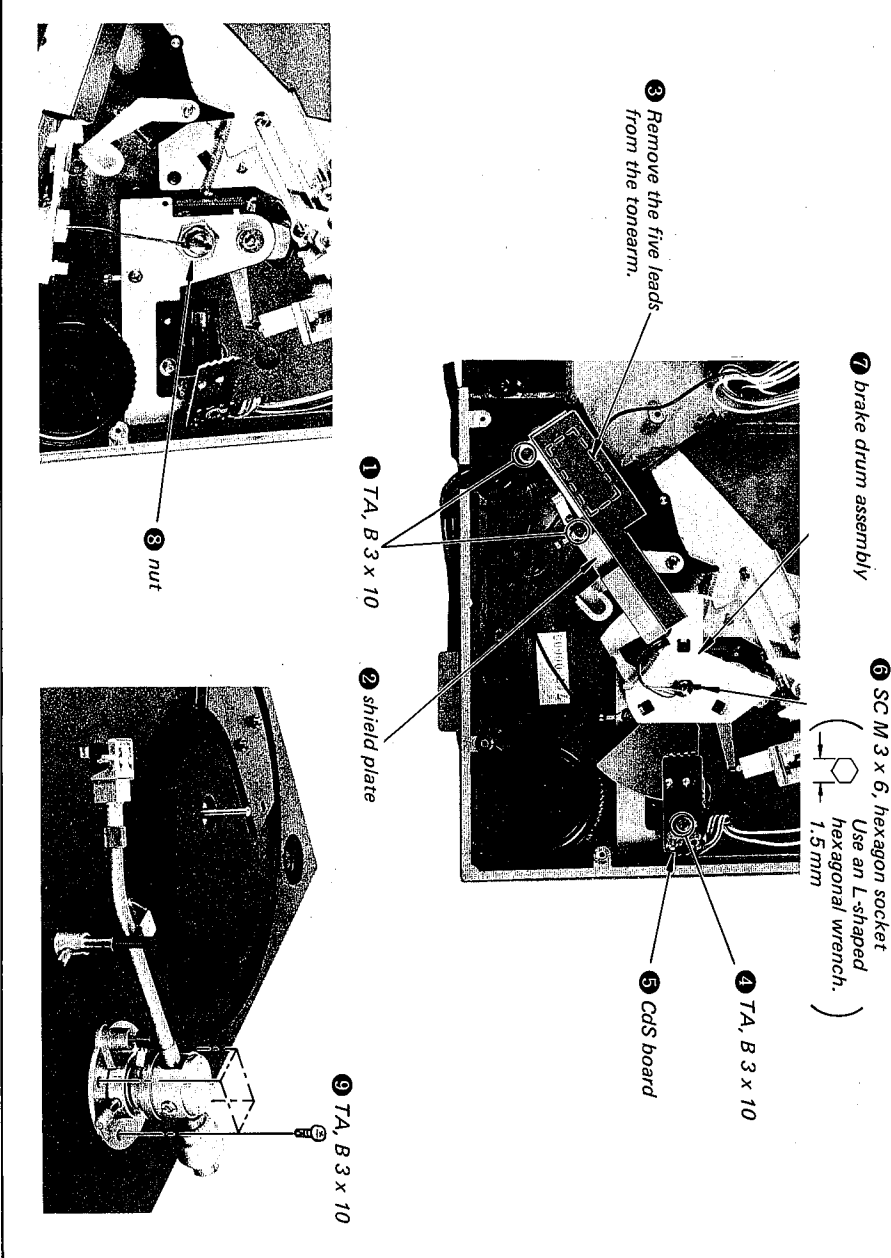


Automatic Return Detecting Lamp (PL1) Replacement

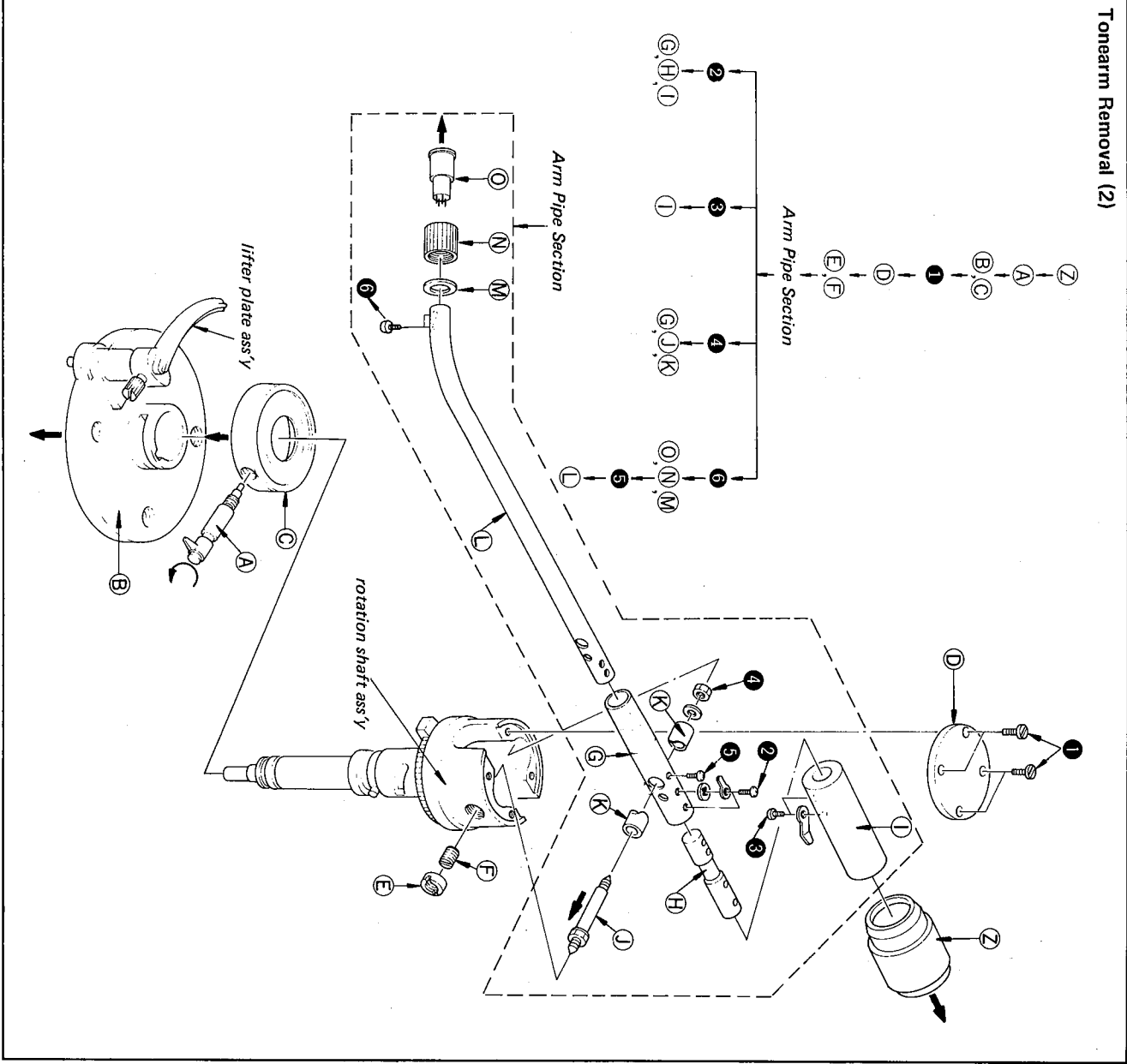


- 3 Bring the tonearm toward center spindle side.
- 4 Remove the lamp from the lamp holder.

Tonearm Removal (1)

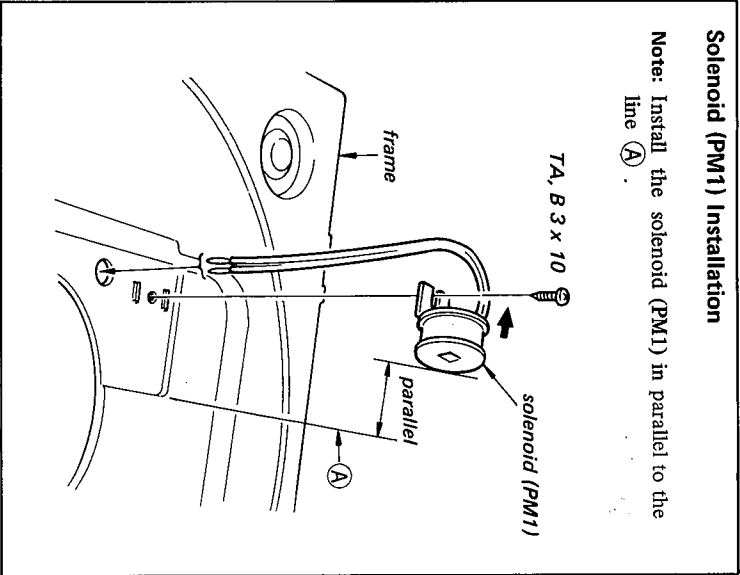


Tonearm Removal (2)

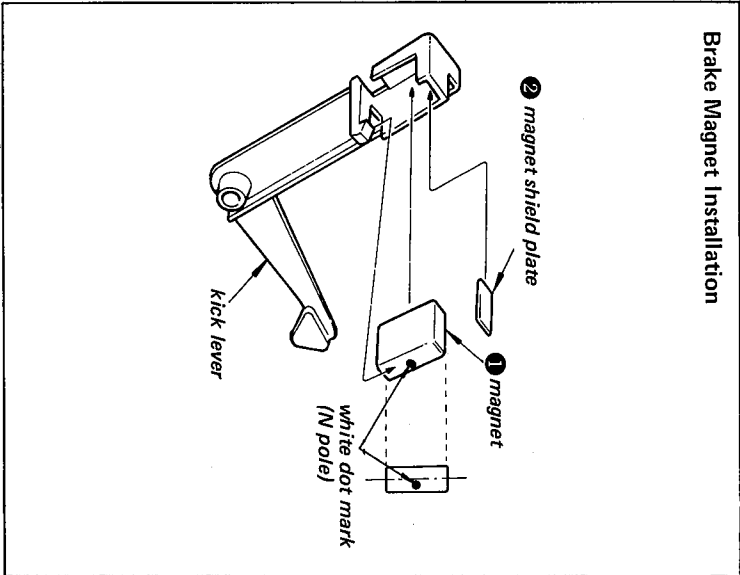


Solenoid (PM1) Installation

Note: Install the solenoid (PM1) in parallel to the line A.



Brake Magnet Installation

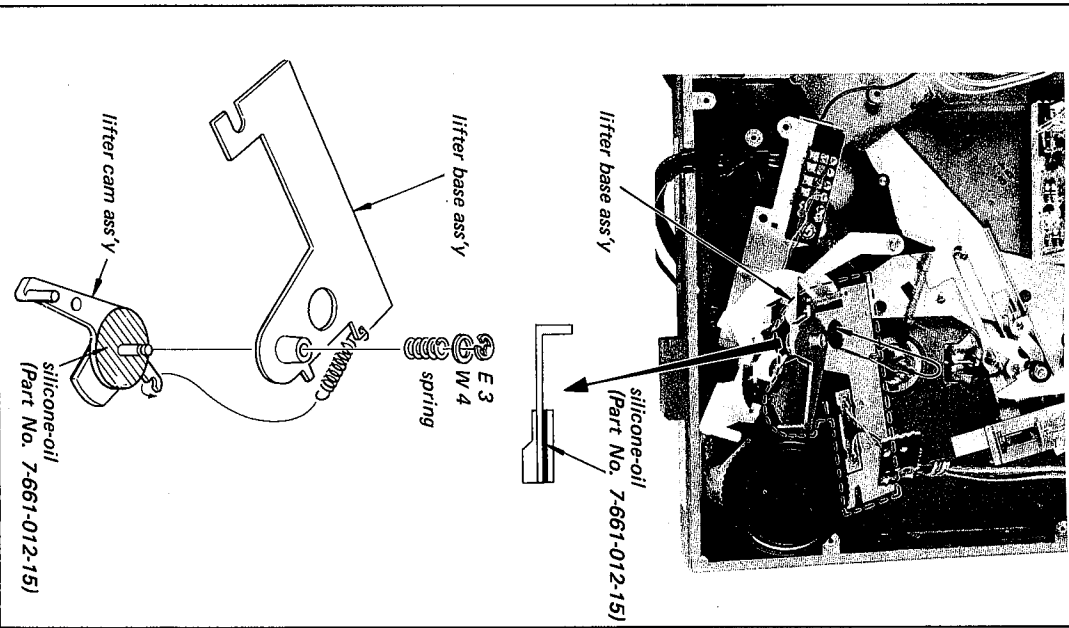


Note on Arm Lifter Mechanism

The arm lifter mechanism of this set uses silicone-oil as damper between the lifter cam assembly and the lifter base assembly.

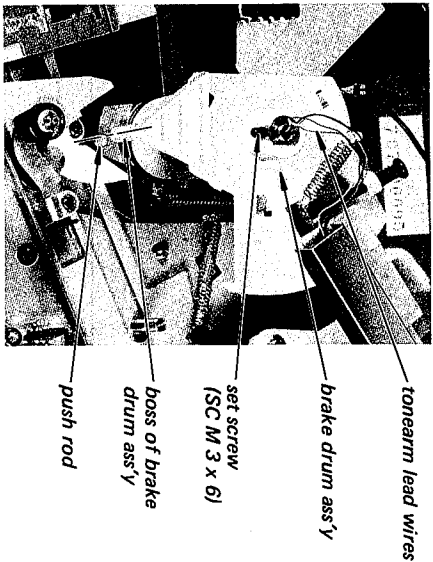
If the arm lifter moves down too quickly, apply silicone-oil in the numerical order given.

1. Perform the tonearm removal (1) on page 5.
2. Remove the lifter base assembly.
3. Remove E3 and the lifter cam assembly from the lifter base assembly.
4. Wipe off the silicone-oil on the lifter cam assembly and the lifter base assembly.
5. Apply silicone-oil (7-661-012-15) on the lifter cam assembly.
6. Install the lifter cam assembly on the lifter base assembly.

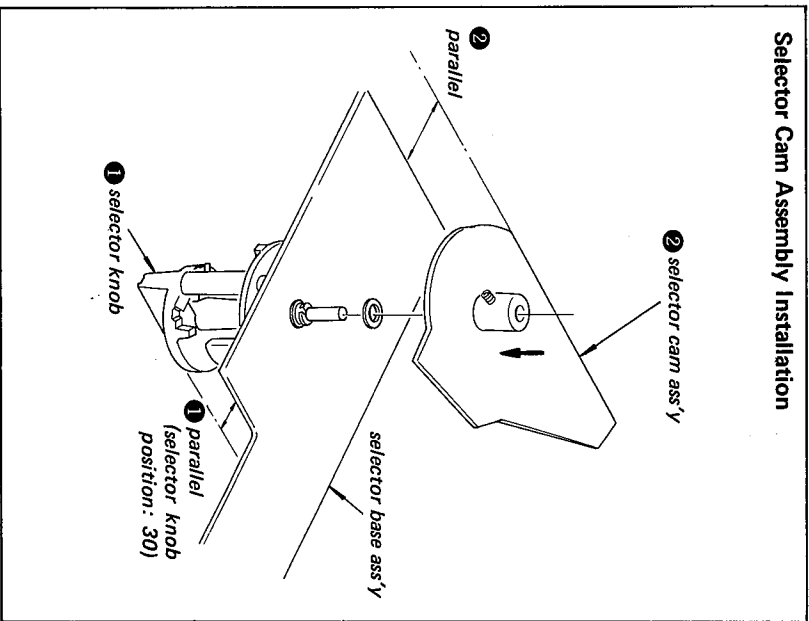


Brake Drum Assembly Installation

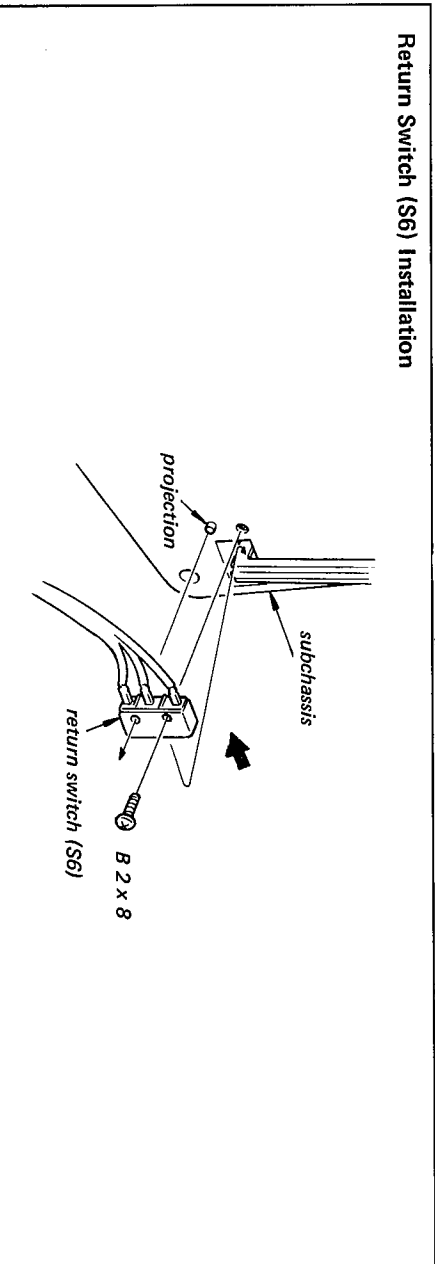
1. Thread the lead wires of tonearm in the brake drum assembly.
2. Insert the brake drum assembly in the rotation shaft of tonearm.
3. Place the boss of brake drum assembly as shown below and fix the brake drum assembly with a set screw (SC M 3 x 6).
4. Perform the automatic return adjustment (Refer to the page 13).



Selector Cam Assembly Installation



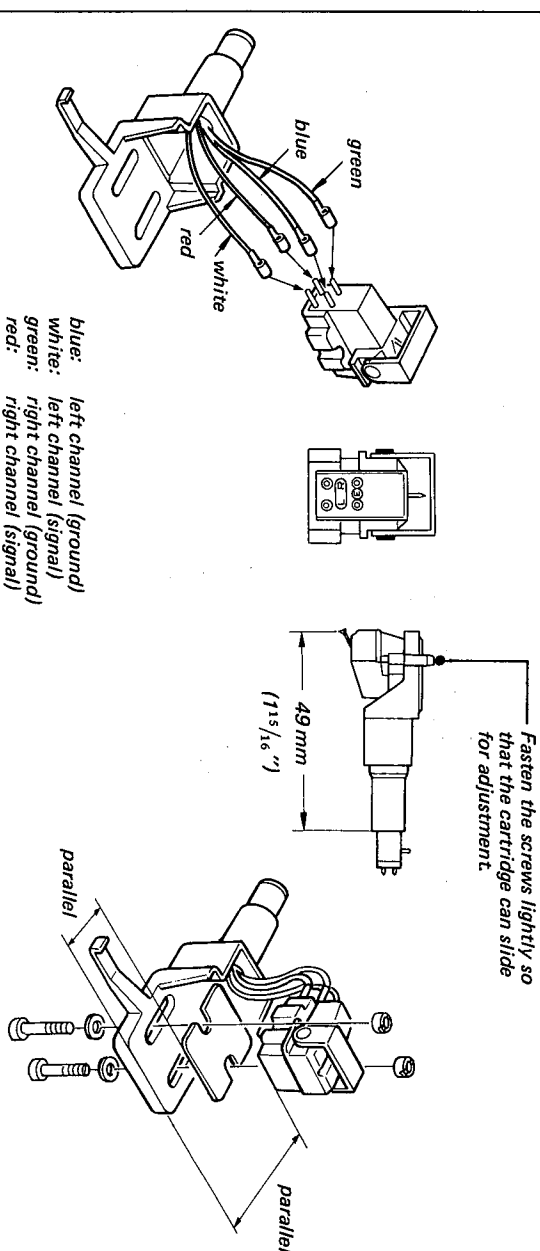
Return Switch (S6) Installation



Cartridge-Lead Wire Replacement

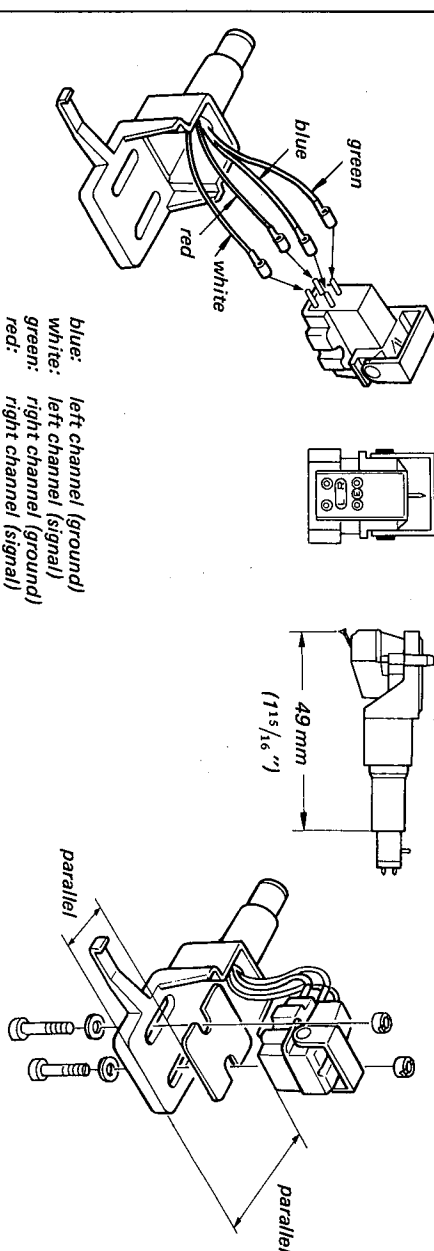
1. Cartridge-Lead Wire Connection

- 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 (1⁵/₁₆ inches).



Cartridge-Lead Wire Replacement

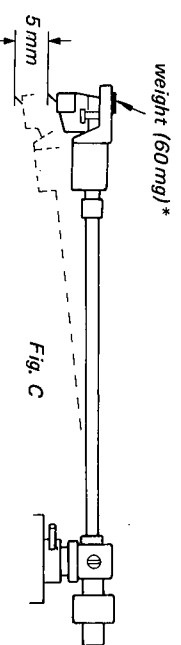
— Fasten the screws lightly so that the cartridge can slide for adjustment



white

- 4) Install the tonearm on the set and make the longitudinal sensitivity adjustment as described in the step (5).

weight is removed. (Fig. D)



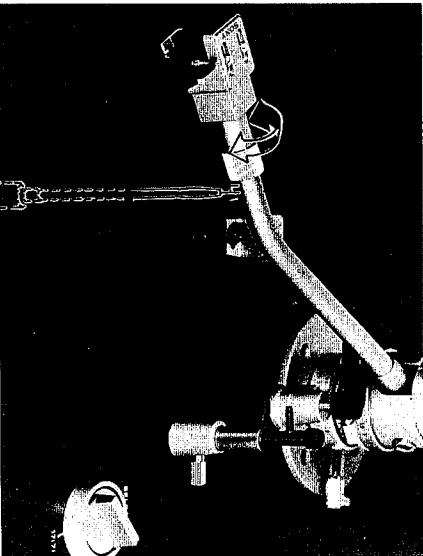
-
- pivot bearing*
- ⊖ screwdriver*

SECTION 3
ADJUSTMENTS

3.1. MECHANICAL ADJUSTMENTS

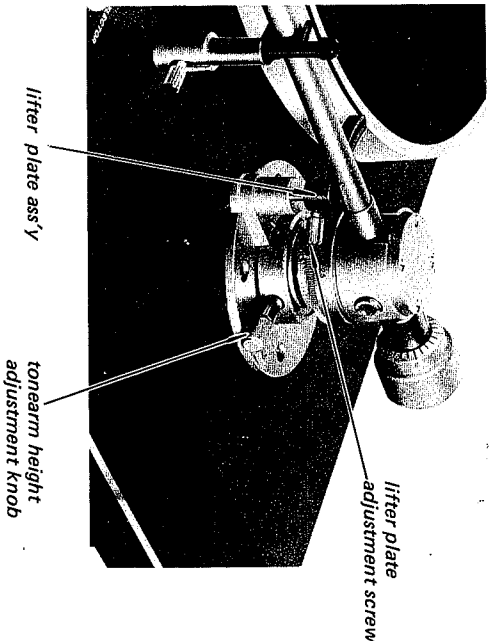
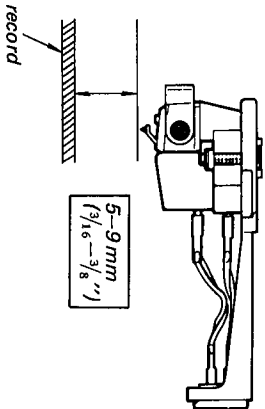
Head Shell Angle Adjustment

- 1 Remove the bottom plate and turntable.



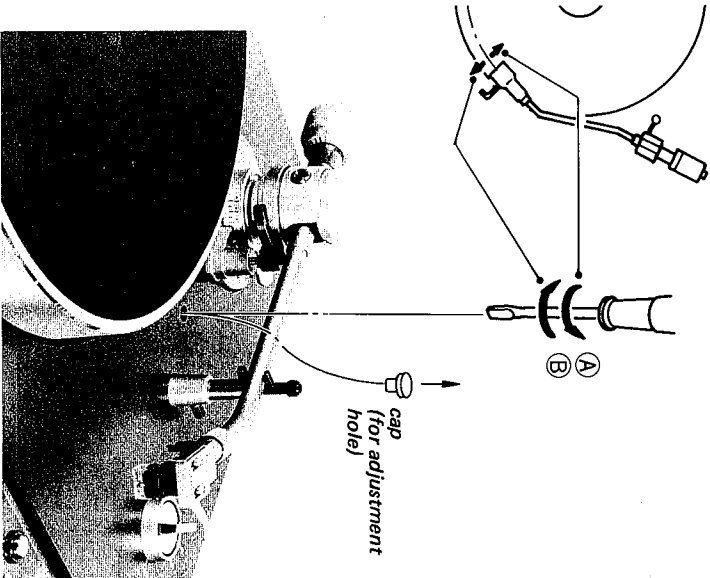
Stylus Height Adjustment

1. Bring the tonearm above 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 ($\frac{3}{16}$ – $\frac{3}{8}$ inches).
3. If necessary, loosen the lifter plate adjustment screw and adjust the lifter height.



Stylus Drop-point Adjustment

- Remove the cap from the adjustment hole.



1. Set the record size selector lever to the 30 (12") position and make sure that the stylus gets down on the specified point of the test record.

test record: YFSC-16

Record size selector lever position	Count of drop-point
30 (12")	4 to 16
25 (10")	6 to 24
17 (7")	7 to 25

2. If necessary, insert the screwdriver into the hole and adjust the drop-point by turning the adjustment screw.

To change the drop-point inward

Turn the adjustment screw slightly counterclockwise (A).

To change the drop-point outward:

Turn the adjustment screw slightly clockwise (B).

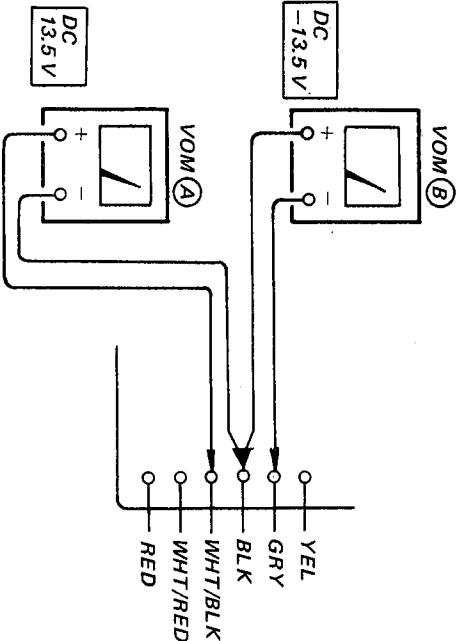
3. Once it is properly adjusted with a 30 cm (12") record, the drop-point will be correct for 17 cm (7") and 25 cm (10") records as well.

Note: The stylus drop-point is changed to about 12 mm ($\frac{1}{2}$ ") by one turn of the adjustment screw.

3-2. ELECTRICAL ADJUSTMENTS

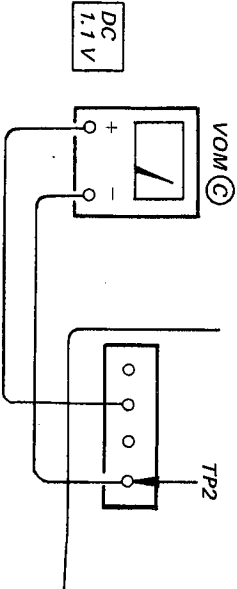
B+ Voltage Adjustment

Adjust RV101 for 13.5 V dc reading on the VOM **A**, and -13.5 V dc reading on the VOM **B**.

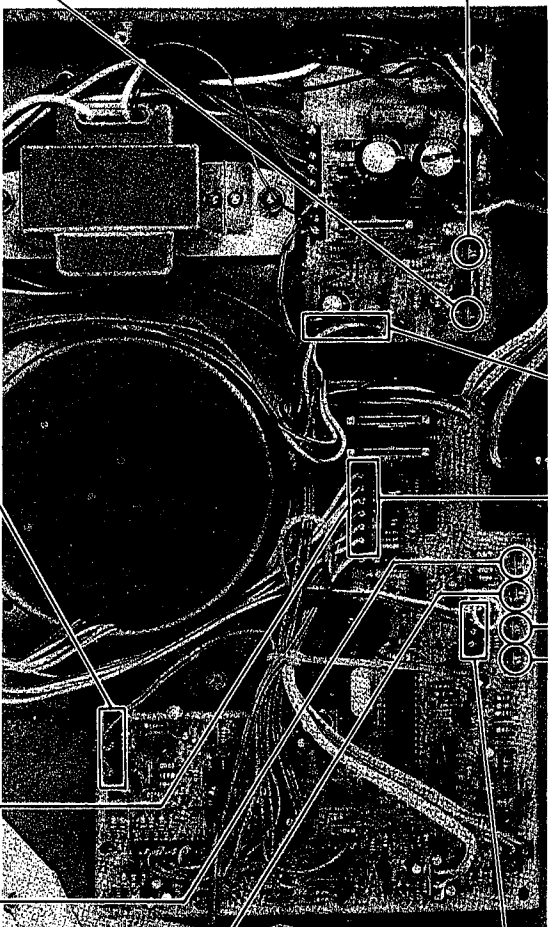
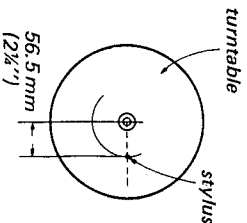


Automatic Return Adjustment

1. Set the power switch on.
2. Bring the tonearm toward the center spindle side.
3. Adjust RV102 for 1.1 V dc reading on the VOM **C**.



4. Set the stylus position as shown below. Adjust the shutter adjustment screw for 7.3 V dc reading on the VOM **C**.

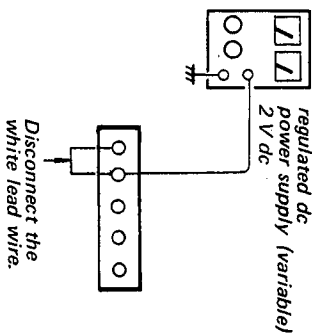


RV206 (H2)
RV205 (H1)

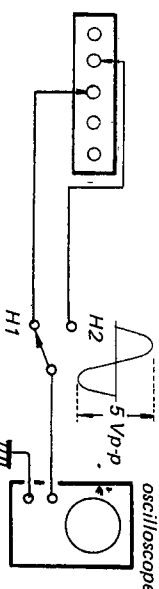
RV203 (H2)
RV204 (H1)

Hall Device Gain Adjustment (33 1/3 rpm)

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

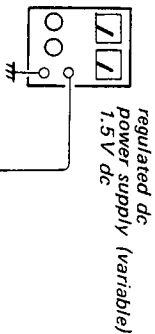


2. Connect an oscilloscope to H1 and adjust RV205 for the specified waveform on the oscilloscope.
3. Connect an oscilloscope to H2 and adjust RV206 for the specified waveform on the oscilloscope.

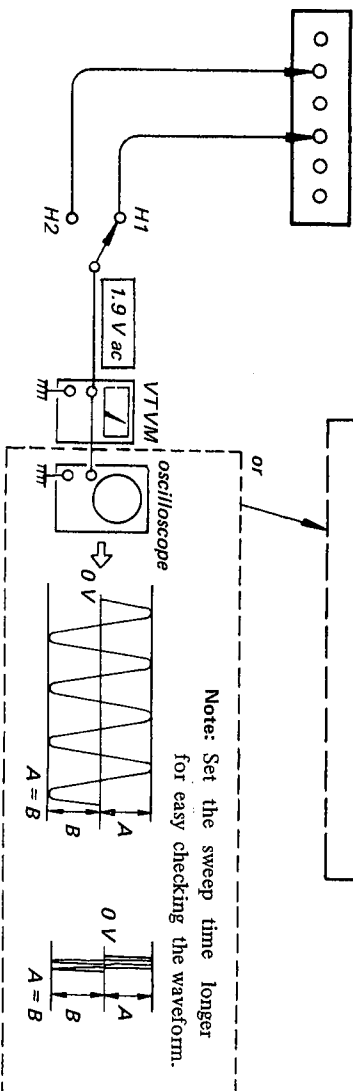
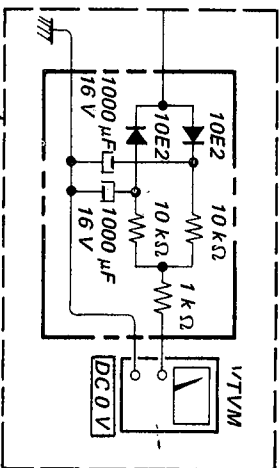


Motor Amp Offset Adjustment (33 rpm)

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 RV203 for 0 V dc VTVM reading or the waveform on oscilloscope as shown below.



Turntable Speed A

1. Set the SPEED
2. Reference wave

3. If the correct RV202 (45 rpm

4. Set the SPEED :

5. Reference wave:

6. If the correct RV201 (33 rpm appears stationa

Speed Detecting Hi

Power switch: ON

1. Adjust the positi reading is more t
2. Make sure that t table and tighten

Note: The clearar rim and the than 0.3 mm

more than 15 mV ac (33 rpm)

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 an oscilloscope to H1 and adjust RV205 for the specified waveform on the oscilloscope.
3. Connect an oscilloscope to H2 and adjust RV206 for the specified waveform on the oscilloscope.

RV206 (H2)
RV205 (H1)
RV203 (H2)
RV204 (H1)

Motor Amp Offset Adjustment (33 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 RV203 for 0 V dc VTVM reading or the waveform on oscilloscope as shown below.

regulated dc power supply (variable)
1.5 V dc
Disconnect the white lead wire.
VTVM
oscilloscope
5 Vp-p
H1
H2

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 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 RV203 for 0 V dc VTVM reading or the waveform on oscilloscope as shown below.

regulated dc power supply (variable)
2 V dc
Disconnect the white lead wire.
oscilloscope
5 Vp-p
H1
H2

Motor Amp Offset Adjustment (33 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 RV203 for 0 V dc VTVM reading or the waveform on oscilloscope as shown below.

regulated dc power supply (variable)
1.5 V dc
Disconnect the white lead wire.
VTVM
oscilloscope
5 Vp-p
H1
H2

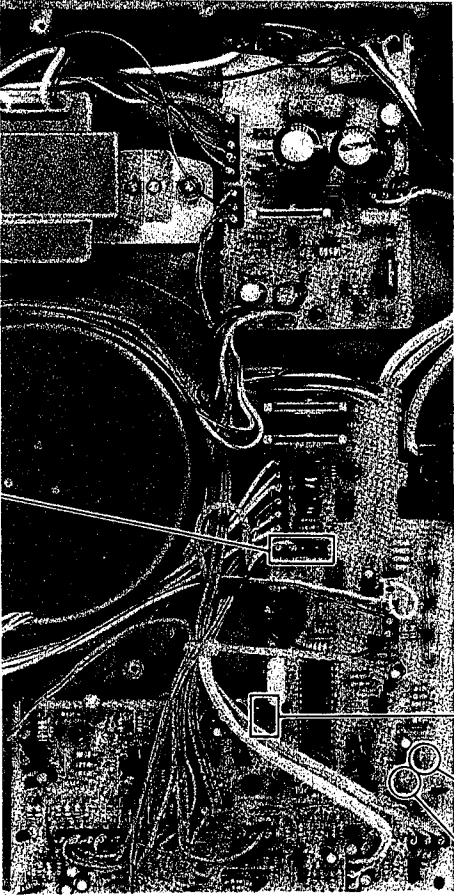
Turntable Speed Adjustment

1. Set the SPEED switch (S2, 3) to "45" position.
2. Reference waveform:

Note: Waveform must appear ⊕ side.
3. If the correct waveform does not appear, adjust RV202 (45 rpm).
4. Set the SPEED switch (2, 3) to "33" position.
5. Reference waveform:

Note: Waveform must appear ⊕ side.
6. If the correct waveform does not appear, adjust RV201 (33 rpm) so that the stroboscope pattern appears stationary.

RV202 (45 rpm)
RV201 (33 rpm)
oscilloscope
ground
Ⓣ21 pin of IC1



Speed Detecting Head Output Level Adjustment

Power switch: ON

1. Adjust the position of the head so that the VTVM reading is more than 15 mV ac at 33 rpm.
2. Make sure that the head does not touch the turntable and tighten the screws securely.

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

VTVM (range: ac)
more than 15 mV ac
(33 rpm)

Adjustment Location —

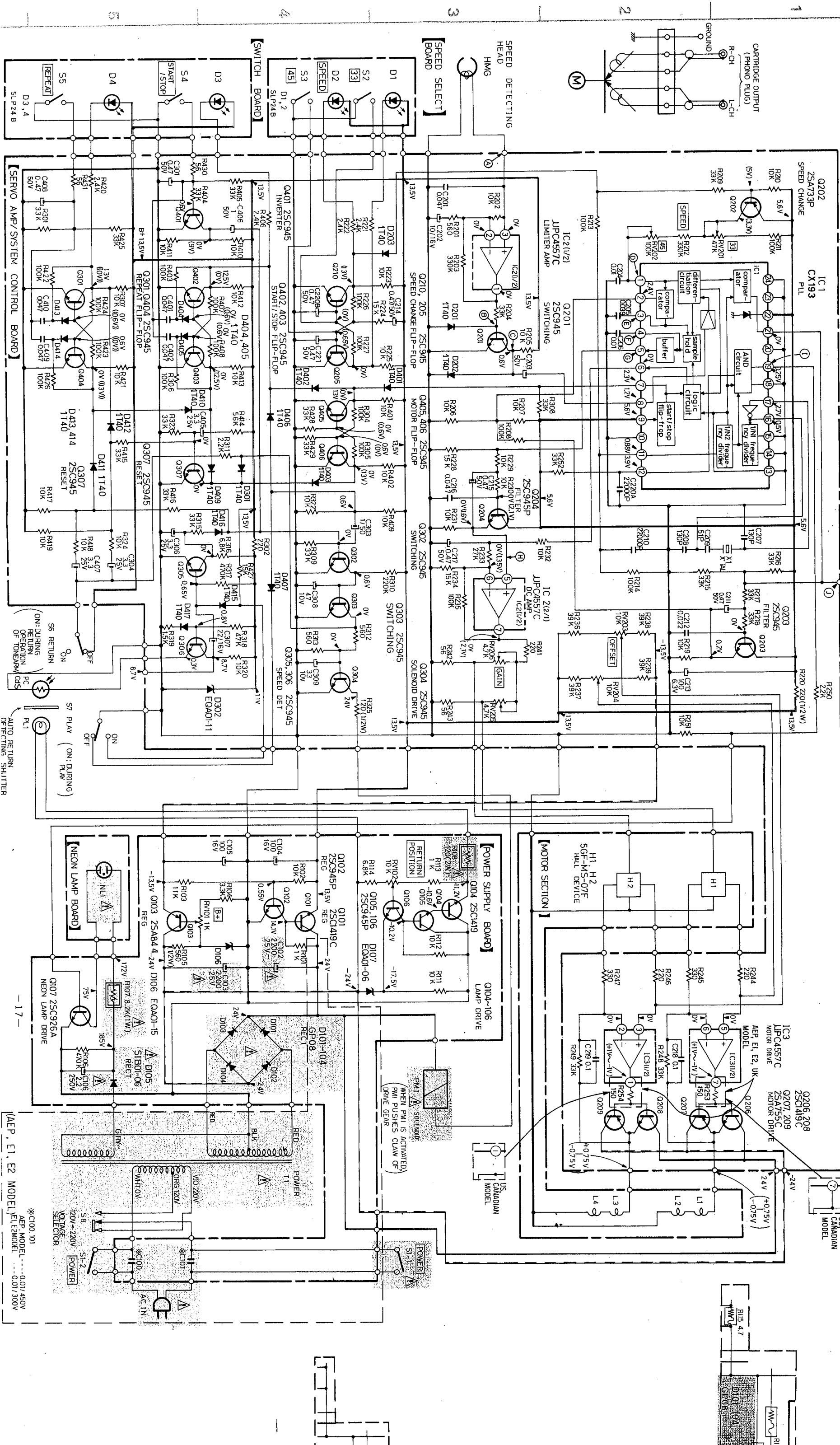
BVT, 3 x 12
speed detecting head (HMG)

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

Note: Les composants identifiés par un trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4.1. SCHEMATIC DIAGRAM

DIAGRAMS



Note: Les composants identifiés par un trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

100

- All capacitors are in μF unless otherwise noted. p.e.: μM 50WV or less are not indicated except for electrolytics.

- All resistors are in Ω , $\frac{1}{4}$ W unless otherwise noted.
K Ω : 1000 Ω ; M Ω : 1000 k Ω

- : panel designation

- All adjustable resistors have characteristic curve B, unless otherwise noted.

- — : B-bus

- Readings are taken under no-signal conditions with a VOM (20 k Ω /V).

```
S1 (POWER) ..... ON
( ) : S2 (SPEED 33) ..... ON
```

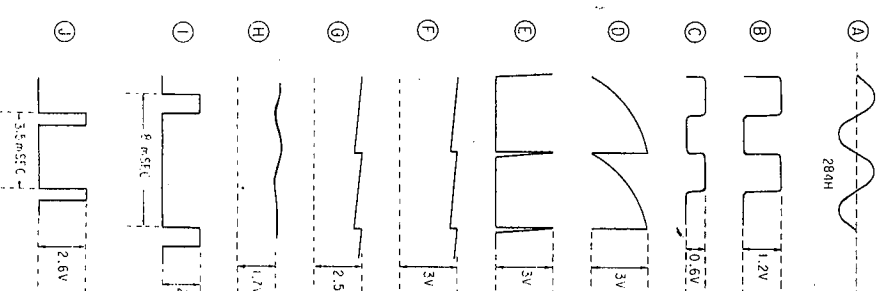
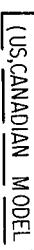
Selector knob MANUAL

```
S1 (POWER) . . . . . ON
S4 (START/STOP) . . . . . ON
```

(()) When S5 (REPEAT) is pressed during play at 33 rpm.

Ref. No.	Switch	Position
----------	--------	----------

Ref. No.	Switch	Position
S1	POWER	OFF
S2	SPEED 33	OFF
S3	4SPEED 45	OFF
S4	START/STOP	OFF
S5	REPEAT	OFF
S6	RETURN	OFF
S7	PLAY	OFF
S8	VOLTAGE SELECTOR	220 V (AEP, E1, E2 model) 240 V (UK model)



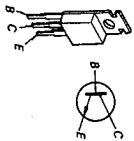
PS-X60 PS-X60

4.2. MOUNTING DIAGRAM — Conductor Side —

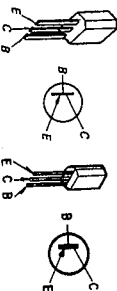
- Replacement Semiconductors

For replacement, use semiconductors except in ().

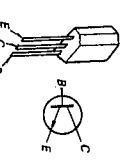
Q101, Q206, 208 } 2SC1061 (2SC1419C)
Q104 2SC1061 (2SC1419)



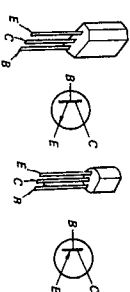
Q103: 2SA678 (2SA844)



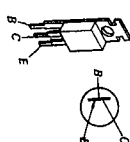
Q107: 2SC926A



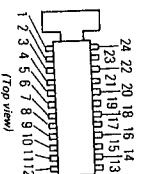
Q202: 2SA678 (2SA733P)



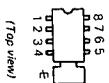
Q207, 209: 2SA671 (2SA755C)



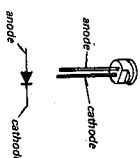
IC1: CX193



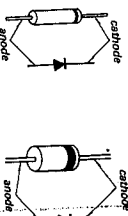
IC2, 3: μ PC457C



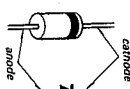
D1-4: SLP24B



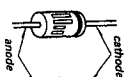
D101-104: 10E2 (GP08)



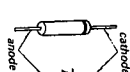
D105: 10D6 (SIB01-06)



D106: EQB01-15 (EOA01-15)
D107: EQB01-06 (EOA01-06)
D302: EQB01-11 (EOA01-11)



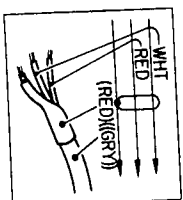
D201-203
D301 D401-407
D409-417 } 1S1555 (1T40)



H1, 2: 5GF-MS-07F

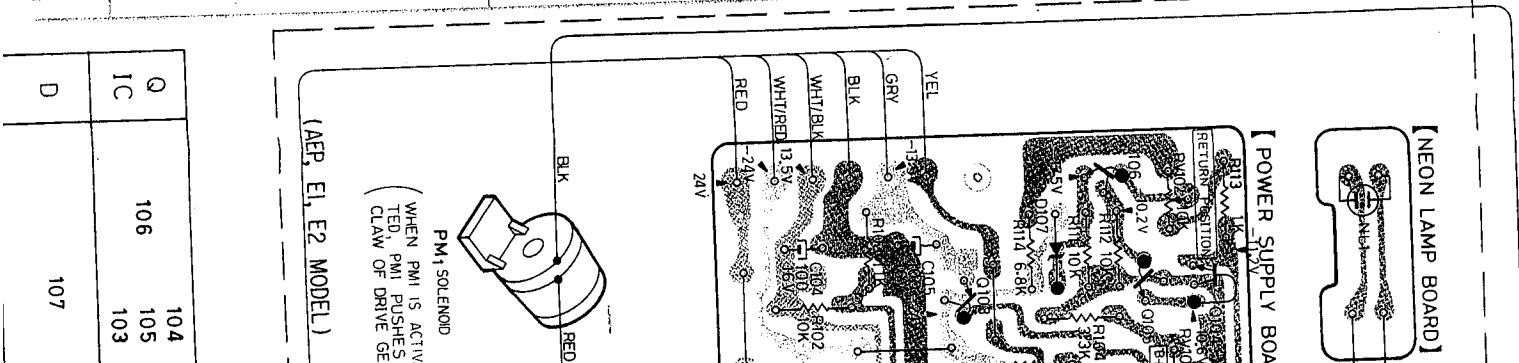
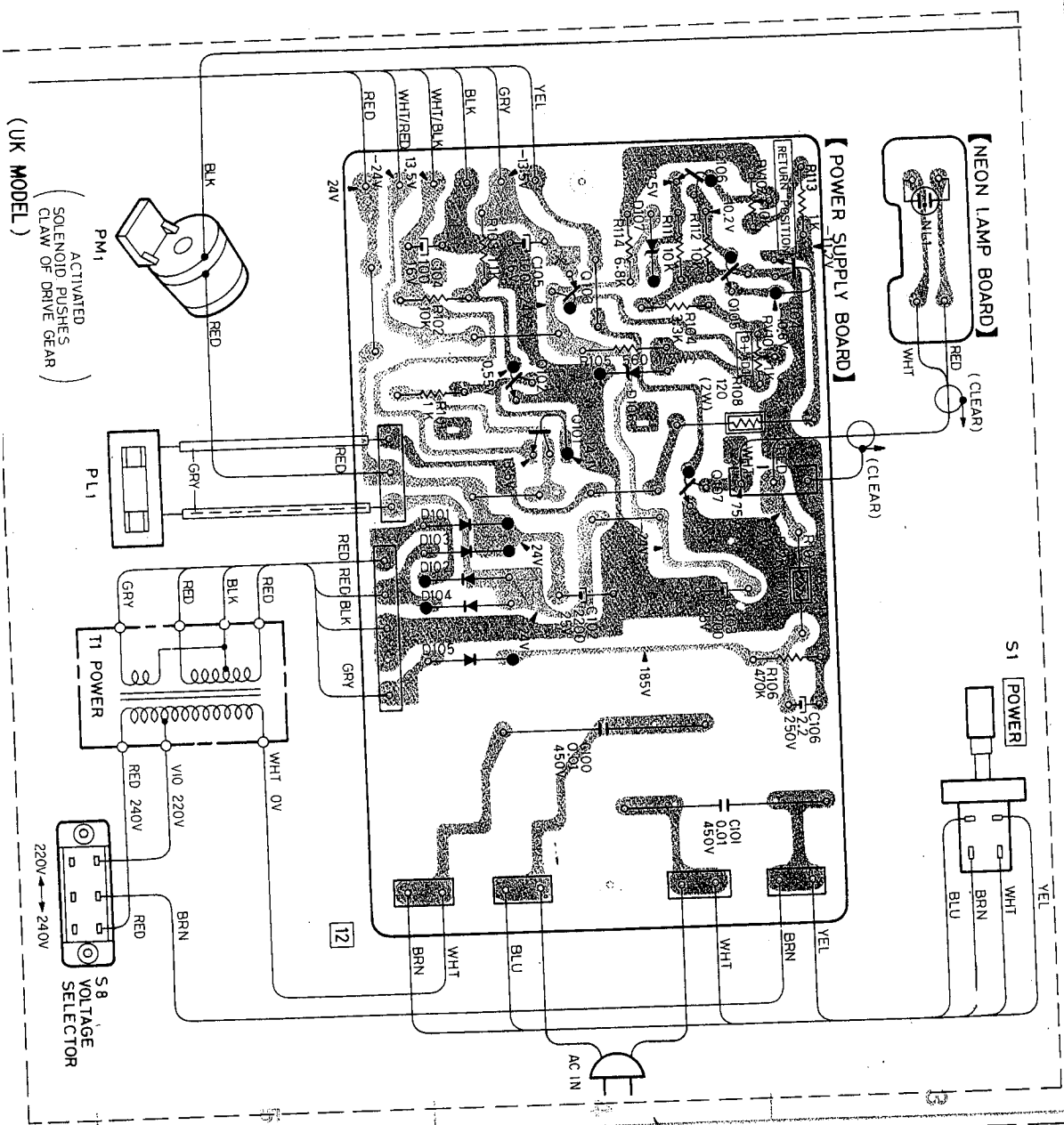
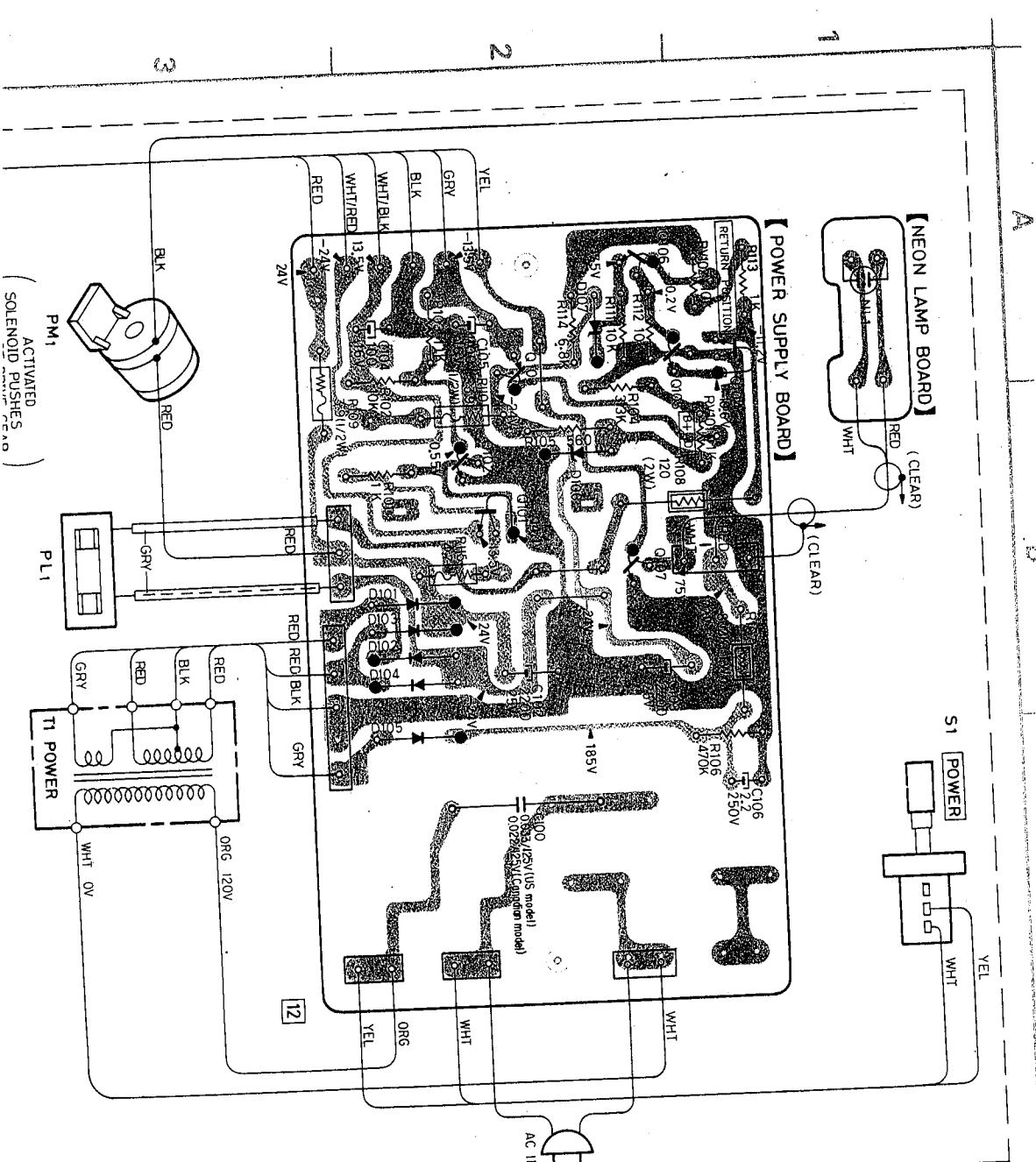


- : parts extracted from the component side.
- Color code of sleeving over the end of the jacket.

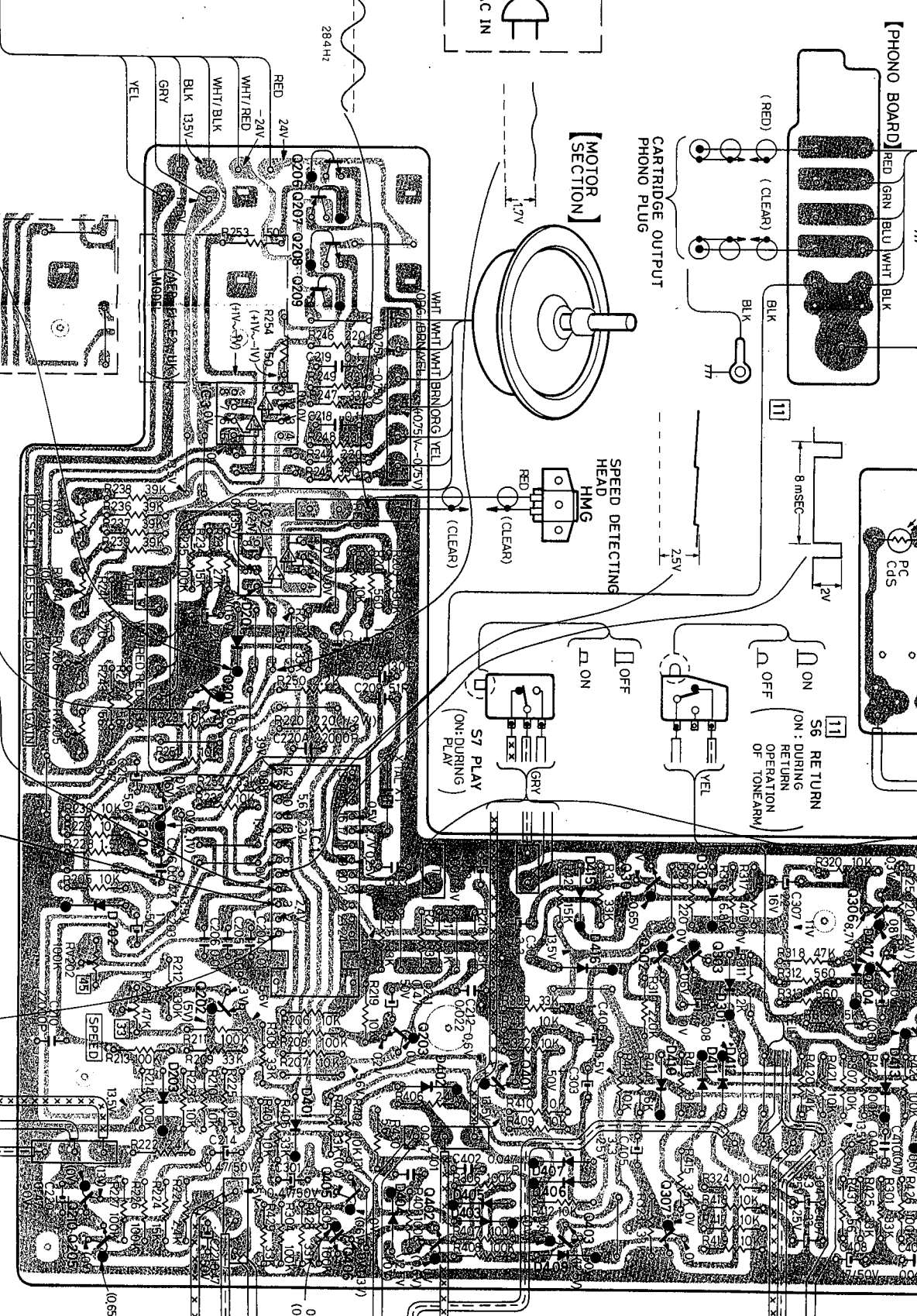
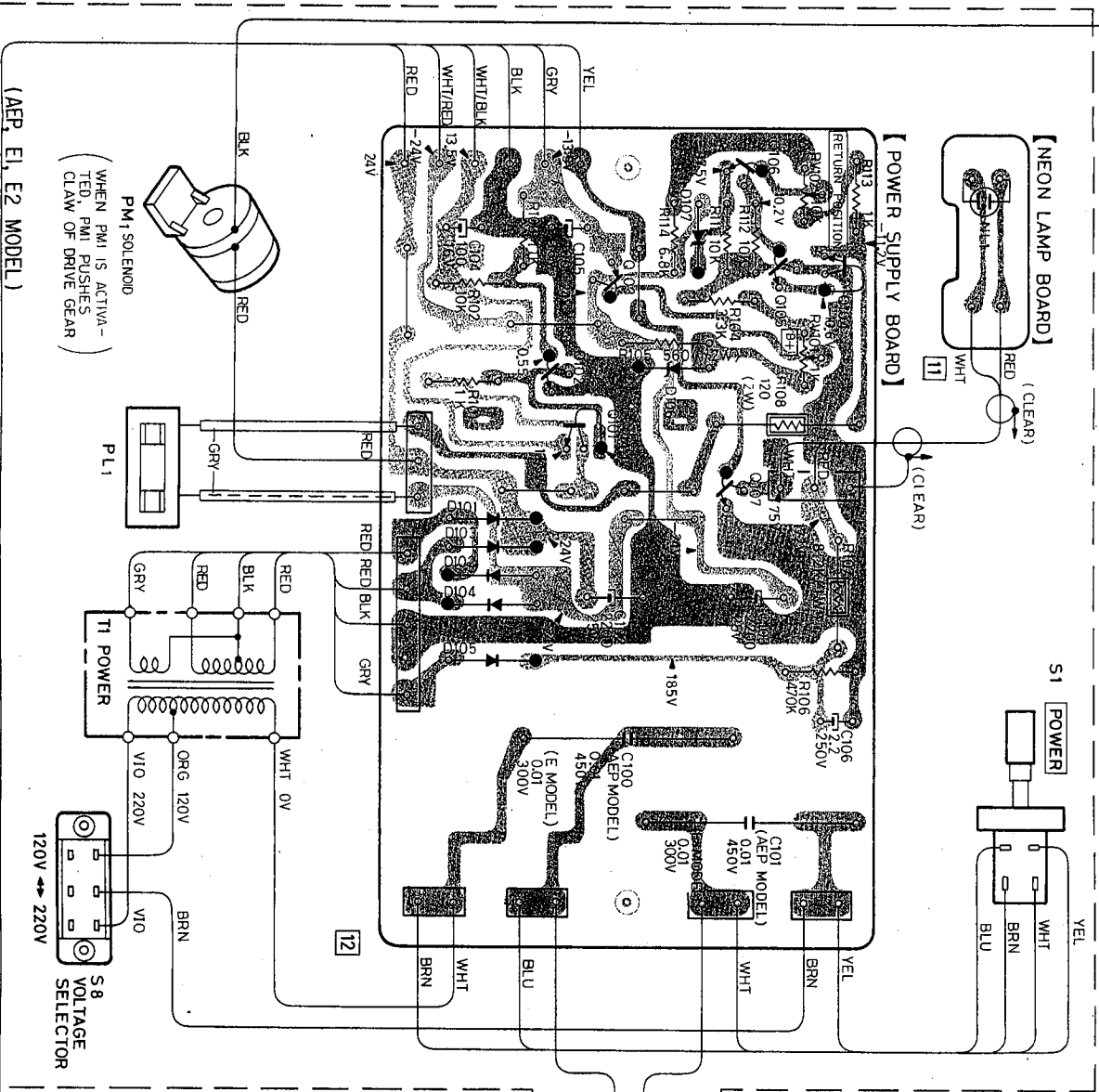
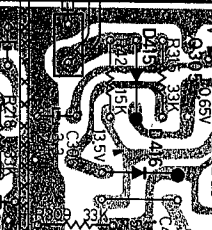
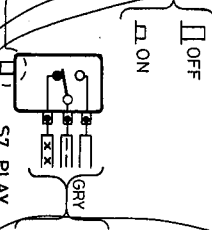
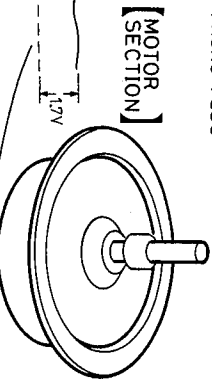
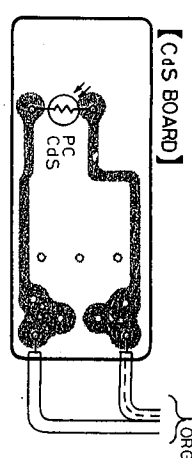
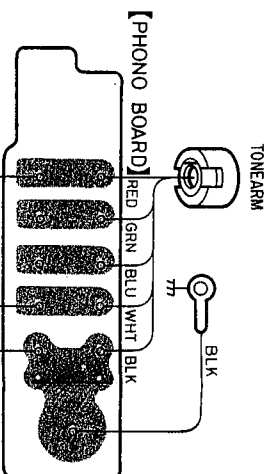
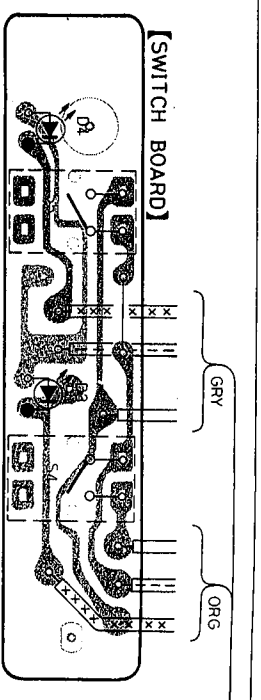
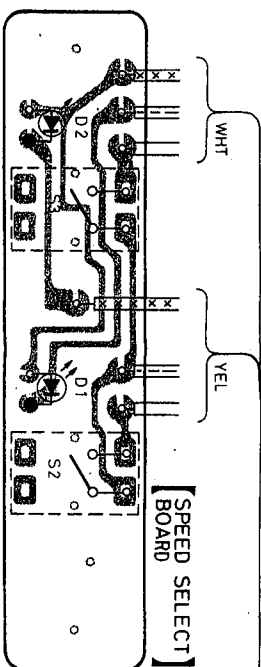
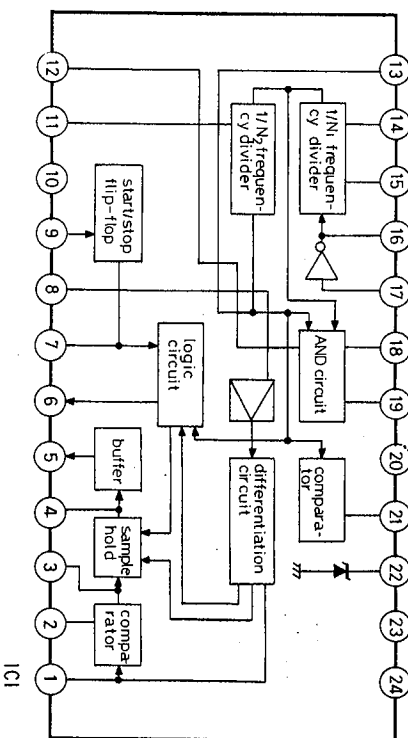


- B+pattern

Pattern



Q	IC	104	105	103
D		107		



Q	106	104	105	101	107	206	207	208	209	IC 3	IC 2	201	IC 1	306	304	301	404	307	403	402	IC
IC	103	102	101	102	105	206	207	208	209	IC 3	IC 2	201	IC 1	306	304	301	404	307	403	402	IC
D	107	106	101	102	105	206	207	208	209	IC 3	IC 2	201	IC 1	306	304	301	404	307	403	402	D

EXPLODED VIEWS

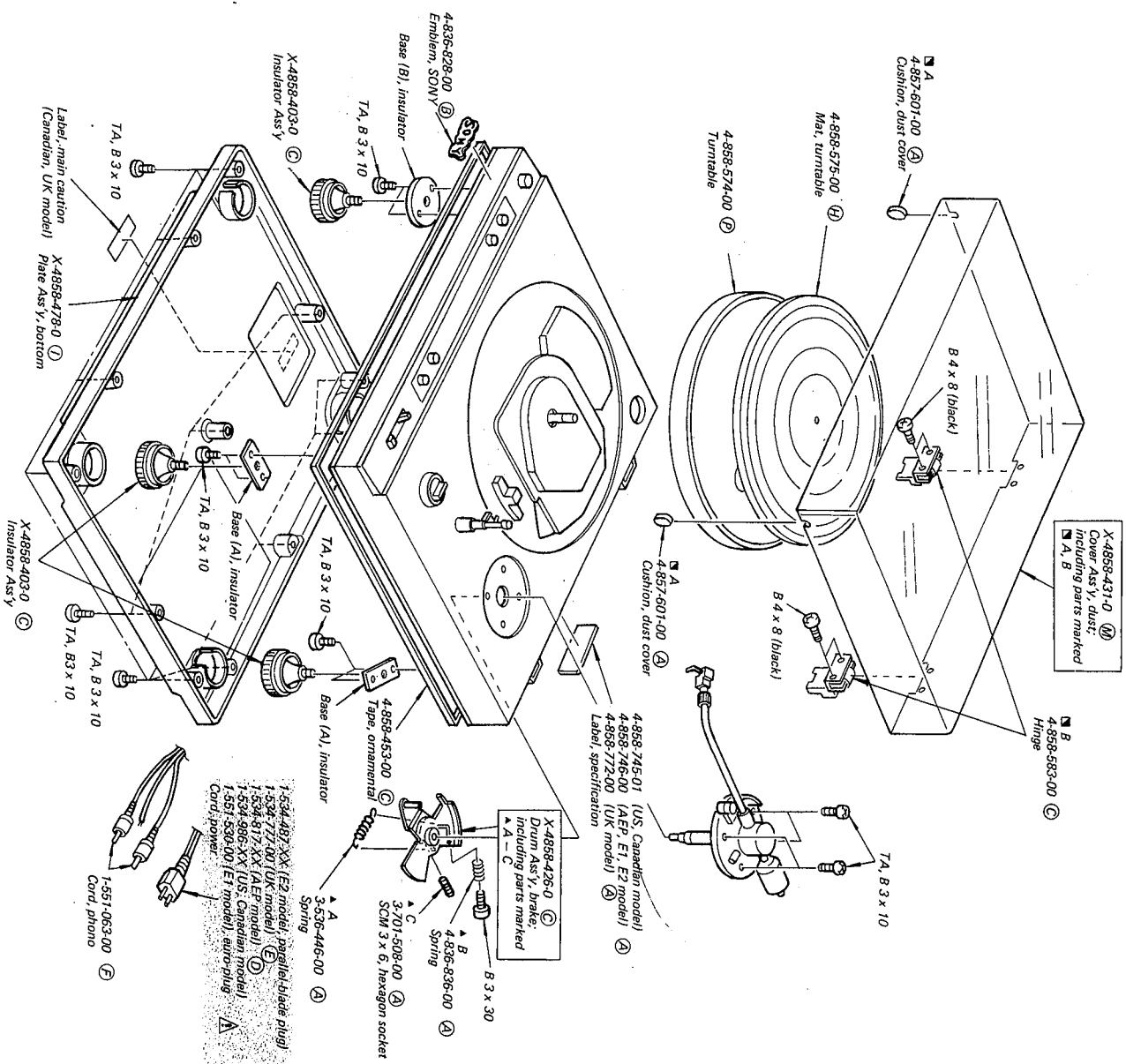
5-1.

A

2

Q

D



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

Note: Les composants identifiés par un trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note:

- Circled letters (**A**) to (**Z**) are applicable to European models only.
- 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

— 23 —

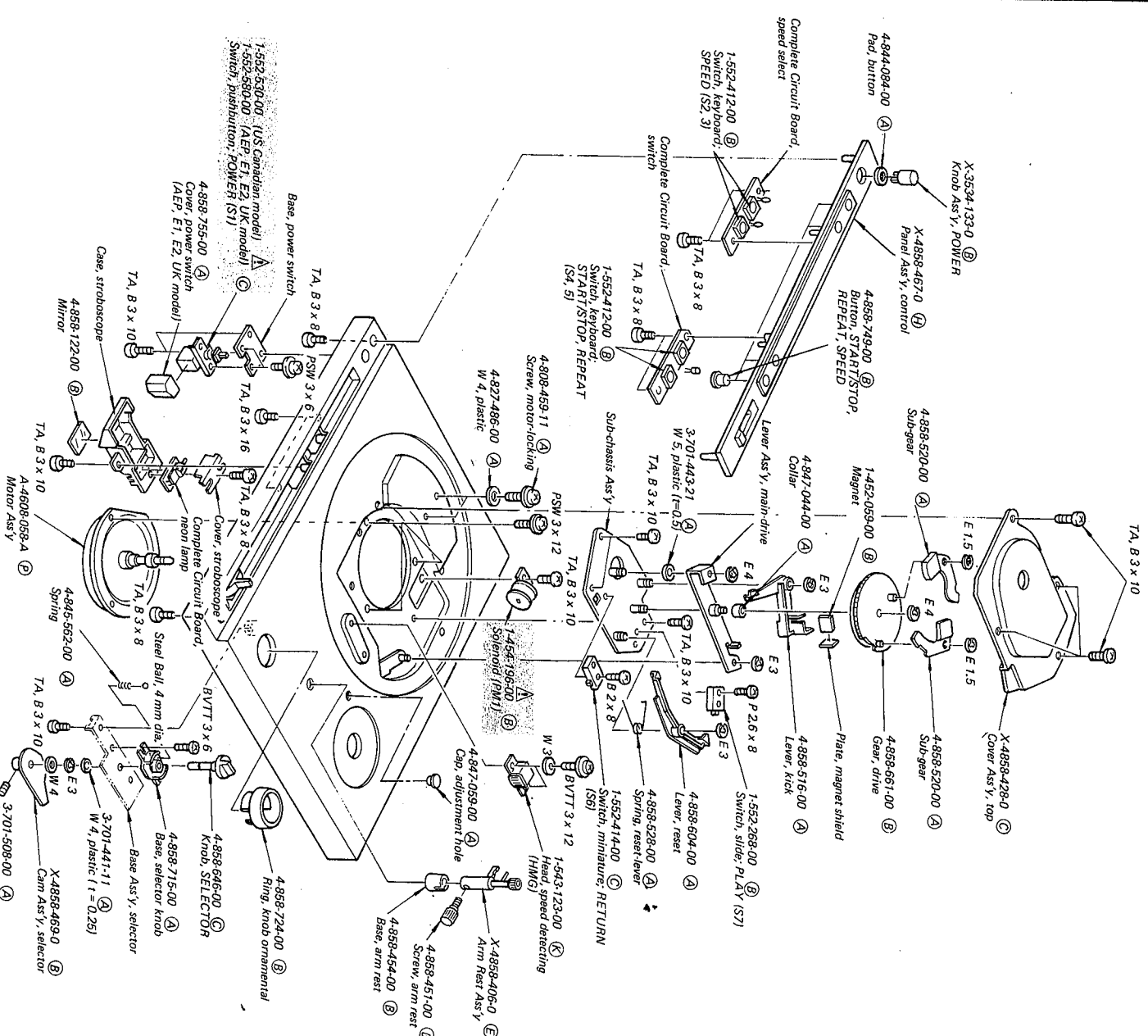
5-2.

A

DD

Q

D



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

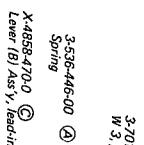
Note: Les composants identifiés par un trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note:

- Circled letters (**A**) to (**Z**) are applicable to European models only.
 - 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

— 24 —

5.3



Note: The c

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5-3.

1 4-858-512-00 (A) Cam, return

2 4-858-757-00 (A) Spring, return cam
4-858-722-00 (A) Ret. brake
E3
4-858-719-00 (A) Lever (B), brake
1-533-051-XX (A) Holder, lamp
1-518-234-00 (B) Lamp (PL 1)
CS 3
PSW 3 x 6
W 4
4-858-581-00 (A) Spring
4-305-389-00 (A) Base As'y, lifter
3-508-125-00 (A) Spring

3 3-701-439-21 (A) W 3, plastic (I = 0.5)
4-858-527-00 (A) Spring
4-858-725-00 (A) Lever, brake
3-508-125-00 (A) Lever As'y, main
3-508-125-00 (A) BVTT 3 x 6
4-858-595-00 (B) Link (B), lifter
4-858-423-0 (A) Link (A), lifter
3-508-125-00 (A) Spring
TA, B 3 x 10
3-537-790-21 (A) Cushion
4-858-756-00 (B) Lever, main
X-4858-406-0 (A) Spring
X-4858-470-0 (A) Lever (B) As'y, main

4 4-858-545-00 (C) Lever, cueing
E3
P 3 x 6
TA, B 3 x 10
3-702-027-00 (A) Plate, insulation
Heat Sink
Complete Circuit Board, servo amp/system control
3-413-681-00 (A) Complete Circuit Board, servo amp/system control (AEP, E1, UK model)

5 4-858-580-00 (A) Spring, cueing lever
4-858-521-00 (B) Lever, lifter
4-841-025-00 (A) Cushion, tube
TA, B 3 x 10
X-4858-465-0 (A) Blue As'y, selector
1-552-535-00 (C) Voltage Selector (S8)
TA, B 3 x 10
1-442-877-00 (U.S. Canadian model)
1-446-175-00 (AEP, E1, E2, UK model)
1-446-199-00 (UK model)
4-812-554-11 (A) Spacer
4-858-513-00 (A) Spacer
4-858-522-00 (A) Rubber, floating
Plate, transformer holding
BVTT 3 x 20
B 3 x 8
W 3
Plate, power cord holding (Canadian model)
BVTT 3 x 6
3-701-582-00 (A) Stopper, power cord (U.S. Canadian, E2 model)
TA, B 3 x 10
Complete Circuit Board, phono
LW 3
Plate, power cord holding (U.S. Canadian, E2 model)
TA, B 3 x 10
Complete Circuit Board, phono
TA, B 3 x 10
Heat Sink
Complete Circuit Board, power supply

Parts List:

- X-4858-406-0 (A) Arm Rest As'y
- 4-858-451-00 (B) Screw, arm rest
- 158-454-00 (B) Arm rest
- 4-858-418-0 (B) Shifter As'y, lifter
- 4-858-580-00 (A) Spring, cueing lever
- 4-858-521-00 (B) Lever, lifter
- 4-841-025-00 (A) Cushion, tube
- 4-858-545-00 (C) Lever, cueing
- TA, B 3 x 10
- 3-702-027-00 (A) Plate, insulation
- Heat Sink
- Complete Circuit Board, servo amp/system control
- 3-413-681-00 (A) Complete Circuit Board, servo amp/system control (AEP, E1, UK model)
- 1-552-535-00 (C) Voltage Selector (S8)
- TA, B 3 x 10
- 1-442-877-00 (U.S. Canadian model)
- 1-446-175-00 (AEP, E1, E2, UK model)
- 1-446-199-00 (UK model)
- 4-812-554-11 (A) Spacer
- 4-858-513-00 (A) Spacer
- 4-858-522-00 (A) Rubber, floating
- Plate, transformer holding
- BVTT 3 x 20
- B 3 x 8
- W 3
- Plate, power cord holding (Canadian model)
- BVTT 3 x 6
- 3-701-582-00 (A) Stopper, power cord (U.S. Canadian, E2 model)
- TA, B 3 x 10
- Complete Circuit Board, phono
- LW 3
- Plate, power cord holding (U.S. Canadian, E2 model)
- TA, B 3 x 10
- Complete Circuit Board, power supply

Note: The components identified by shading and mark (A) are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque (A) sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note:

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

[illegible]

SECTION 6

ELECTRICAL PARTS LIST

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

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
SEMICONDUCTORS					
Transistors					
⇒ Q101	8-729-316-12	D 2SC1061	T1	A 442-877-00	Power (US, Canadian model)
⇒ Q102	8-729-663-47	B 2SC1364	T1	A 446-175-00	Power (AEP, E1, E2 model)
⇒ Q103	8-727-788-00	B 2SA678	T1	A 446-199-00	Power (UK model)
⇒ Q104	8-729-316-12	D 2SC1061	CAPACITORS		
⇒ Q105, 106	8-729-663-47	B 2SC1364	All capacitors are in μ F and ceramic unless otherwise noted. 50 WV or less are not indicated except for electrolytics.		
Q107	8-720-950-03	C 2SC926A	p : μ F, elect : electrolytic		
⇒ Q201	8-729-663-47	B 2SC1364	C100, 101	A 1-108-779-00	0.01 300 V mylar
⇒ Q202	8-727-788-00	B 2SA678			(E1, E2 model)
⇒ Q203-205	8-729-663-47	B 2SC1364	C100, 101	A 1-115-148-00	C 0.01 450 V paper
⇒ Q206	8-729-316-12	D 2SC1061	C100	A 1-130-098-00	0.022 125 V polyethylene (AEP, UK model)
⇒ Q207	8-729-317-12	E 2SA671	C100	A 1-108-750-00	0.033 125 V mylar (Canadian model)
⇒ Q208	8-729-316-12	D 2SC1061	C102, 103	A 1-123-047-00	C 2200 25 V elect (US model)
⇒ Q209	8-729-317-12	E 2SA671	C104, 105	1-121-415-00	A 100 16 V elect
⇒ Q210	8-729-663-47	B 2SC1364	C106	A 1-123-027-00	B 2.2 250 V elect
⇒ Q301-307	8-729-663-47	B 2SC1364	ICs		
⇒ Q401-406	8-729-663-47	B 2SC1364	IC1	8-751-930-00	K CX193
Diodes					
IC2, 3	8-759-145-57	C μ PC4557C	C201	1-101-925-00	A 0.047
D1-4	8-719-900-24	C SLP24B	C202	1-121-651-00	A 10 16 V elect
⇒ D101-104	A 8-719-200-02	B 10E2	C203	1-121-391-00	A 1 50 V elect
⇒ D105	A 8-719-210-06	B 10D6	C204	1-108-804-00	A 0.01 mylar
⇒ D106	8-719-931-15	B EQB01-15	C205	1-108-360-00	A 0.039 mylar
⇒ D107	8-719-931-06	B EQB01-06	C206	1-108-804-00	A 0.01 mylar
⇒ D201-203	8-719-815-55	B 1S1555	C207, 208	1-101-081-00	A 130p
⇒ D301	8-719-815-55	B 1S1555	C209	1-102-491-00	A 51 p
⇒ D302	8-719-930-11	B EQB01-11	C210, 220A	1-101-924-00	A 22000p
⇒ D401-407	8-719-815-55	B 1S1555	C211	1-121-726-00	A 0.47 50 V elect
⇒ D409-417	8-719-815-55	B 1S1555	C212	1-108-242-00	A 0.022 mylar
Hall Devices					
H1, 2	8-719-905-07	D 5GF-MS-07F	C213	1-124-413-00	A 100 6.3 V elect
			C214, 215	1-121-726-00	A 0.47 50 V elect
			C216	1-108-812-00	A 0.047 mylar
			C217	1-121-726-00	A 0.47 50 V elect
			C218, 219	1-108-870-00	A 0.1 mylar
			C220B, 221	1-121-726-00	A 0.47 50 V elect
			C301	1-121-726-00	A 0.47 50 V elect

TRANSFORMERS					
T1	A 442-877-00	Power (US, Canadian model)	C303	1-121-391-00	A 1 50 V elect
T1	A 446-175-00	Power (AEP, E1, E2 model)	C304, 306	1-121-392-00	A 3.3 25 V elect
T1	A 446-199-00	Power (UK model)	C307	1-121-479-00	A 22 16 V elect
			C308	1-121-352-00	A 47 10 V elect
			C309	1-121-402-00	A 33 10 V elect
RESISTORS					
C401, 402	1-101-952-00	A 0.047	C401, 402	1-101-952-00	A 0.047
C405	1-121-392-00	A 3.3 25 V elect	C405	1-121-392-00	A 3.3 25 V elect
C406	1-121-391-00	A 1 50 V elect	C406	1-121-391-00	A 1 50 V elect
C407	1-121-392-00	A 3.3 25 V elect	C407	1-121-392-00	A 3.3 25 V elect
C408	1-121-726-00	A 0.47 50 V elect	C408	1-121-726-00	A 0.47 50 V elect
C409, 410	1-101-925-00	A 0.047	C409, 410	1-101-925-00	A 0.047
All resistors are in ohms. Common 1/4 W carbon resistors are omitted.					
All adjustable resistors have characteristic curve B, unless otherwise noted. k Ω : 1000 Ω , M Ω : 1000 k Ω					
R105	1-244-867-00	A 560 1/2 W carbon	R105	1-244-867-00	A 560 1/2 W carbon
R107	A 1-213-154-00	A 8.2 k 1 W metal oxide (nonflammable)	R107	A 1-213-154-00	A 8.2 k 1 W metal oxide (nonflammable)
R108	A 1-206-642-00	A 120 2 W metal oxide (nonflammable)	R108	A 1-206-642-00	A 120 2 W metal oxide (nonflammable)
R109, 110	A 1-212-948-00	3.9 1/2 W fusible (US, Canadian model)	R109, 110	A 1-212-948-00	3.9 1/2 W fusible (US, Canadian model)
R115	A 1-217-383-00	4.7 1/4 W fusible (US, Canadian model)	R115	A 1-217-383-00	4.7 1/4 W fusible (US, Canadian model)
R220	1-244-857-00	A 220 1/2 W carbon	R220	1-244-857-00	A 220 1/2 W carbon
R325	1-244-851-00	A 120 1/2 W carbon	R325	1-244-851-00	A 120 1/2 W carbon
RV101	1-224-631-00	A 1 k, adjustable; B+ VOLTAGE POSITION	RV101	1-224-631-00	A 1 k, adjustable; B+ VOLTAGE POSITION
RV102	1-224-645-XX	A 10 k, adjustable; RETURN	RV102	1-224-645-XX	A 10 k, adjustable; RETURN
RV201	1-224-636-00	A 47 k, adjustable; SPEED 33	RV201	1-224-636-00	A 47 k, adjustable; SPEED 33
RV202	1-224-648-XX	B 100 k, adjustable; SPEED 45	RV202	1-224-648-XX	B 100 k, adjustable; SPEED 45
RV203, 204	1-224-634-00	B 10 k, adjustable; OFFSET	RV203, 204	1-224-634-00	B 10 k, adjustable; OFFSET
RV205, 206	1-224-633-00	B 4.7 k, adjustable; GAIN	RV205, 206	1-224-633-00	B 4.7 k, adjustable; GAIN
SWITCHES					
S1	A 1-552-530-00	Pushbutton, power (US, Canadian model)	S1	A 1-552-530-00	Pushbutton, power (US, Canadian model)
S1	A 1-552-580-00	C Pushbutton, power (AEP, UK, E1, E2 model)	S1	A 1-552-580-00	C Pushbutton, power (AEP, UK, E1, E2 model)

MISCELLANEOUS					
S2-5	1-552-412-00	B Keyboard, SPEED, START/STOP, REPEAT	S2-5	1-552-412-00	B Keyboard, SPEED, START/STOP, REPEAT
S6	1-552-414-00	B Miniature, RETURN	S6	1-552-414-00	B Miniature, RETURN
S7	1-552-268-00	B Slide, PLAY	S7	1-552-268-00	B Slide, PLAY
S8	A 1-552-535-00	C Voltage Selector (AEP, E1, E2, UK model)	S8	A 1-552-535-00	C Voltage Selector (AEP, E1, E2, UK model)
HMG	1-543-123-00	K Head, speed detecting	HMG	1-543-123-00	K Head, speed detecting
NL1	A 1-519-152-00	B Lamp, neon	NL1	A 1-519-152-00	B Lamp, neon
PC	1-800-652-00	B CAS	PC	1-800-652-00	B CAS
PL1	1-518-234-00	B Lamp	PL1	1-518-234-00	B Lamp
PM1	A 1-454-196-00	B Solenoid	PM1	A 1-454-196-00	B Solenoid
X1	1-527-380-21	D Crystal	X1	1-527-380-21	D Crystal
A-4505-003-A	Cartridge Ass'y, XL-15 (E1, E2 model)		A-4505-003-A	Cartridge Ass'y, XL-15 (E1, E2 model)	
A-4608-058-A	P Motor Ass'y		A-4608-058-A	P Motor Ass'y	
1-452-059-00	B Magnet		1-452-059-00	B Magnet	
1-533-051-XX	A Holder, lamp		1-533-051-XX	A Holder, lamp	
A 1-534-487-XX	Cord, power; E2 model; parallel-blade plug		A 1-534-487-XX	Cord, power; E2 model; parallel-blade plug	
A 1-534-777-00	B Cord, power (UK model)		A 1-534-777-00	B Cord, power (UK model)	
A 1-534-817-XX	D Cord, power (AEP model)		A 1-534-817-XX	D Cord, power (AEP model)	
A 1-534-986-XX	Cord, power (US, Canadian model)		A 1-534-986-XX	Cord, power (US, Canadian model)	
1-551-063-00	F Cord, phono		1-551-063-00	F Cord, phono	
A 1-551-530-00	Cord, power; E1 model; euro-plug		A 1-551-530-00	Cord, power; E1 model; euro-plug	
1-561-202-00	F Connector, head shell		1-561-202-00	F Connector, head shell	

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

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

Note: Les composants identifiés par un trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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

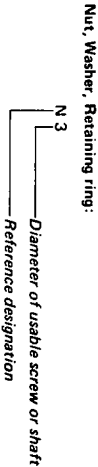
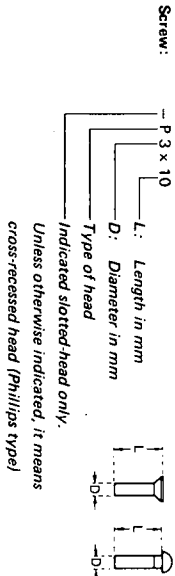
Note: Les composants identifiés par un trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: Circled letter (A) is applicable to European models only.

1/4 WATT CARBON RESISTORS (A)

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-512-00	43k	1-246-512-00	430k	1-246-536-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00

HARDWARE NOMENCLATURE



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSP		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
PSW PSpw		round-head screw	binding-head (B) screw for replacement
R		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-filler-head screw	
RF		fillister-head screw	
BV		brazer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

ACCESSORIES AND PACKING MATERIALS

Part No.	Description
2-056-532-00	(B) Screw (A), cartridge (AEP, US, Canadian, UK model)
2-224-081-00	(A) Screw (E), cartridge (AEP, US, Canadian, UK model)
2-227-313-00	(A) Spacer (AEP, US, Canadian, UK model)
3-701-438-21	(A) W 2.5, plastic (AEP, US, Canadian, UK model)
3-701-613-00	(A) Bag, plastic (AEP, US, Canadian, UK model)
3-701-614-00	(A) Bag, plastic (AEP, US, Canadian, UK model)
3-701-616-00	(A) Bag, plastic (AEP, US, Canadian, UK model)
3-701-630-00	(A) Bag, plastic (AEP, US, Canadian, UK model)
3-710-634-00	(A) Bag, plastic (AEP, US, Canadian, UK model)
3-710-806-00	(A) Adaptor, 45 r.p.m. (AEP, US, Canadian, UK model)
3-770-585-11	(D) Manual, instruction (AEP, E1, E2, UK model)
3-770-585-21	Manual, instruction (US, Canadian model)
3-794-265-11	Sheet, XL-15 (E1, E2 model)
3-749-284-31	Manual, instruction; French (Canadian model)
4-815-655-00	(A) Nut (A), cartridge (AEP, US, Canadian, UK model)
4-848-002-00	(A) Cushion, arm pipe (AEP, US, Canadian, UK model)
4-858-407-00	(A) Drop-point Adjustment Key (AEP, US, Canadian, UK model)
4-858-483-00	(C) Extra Weight (AEP, US, Canadian, UK model)
4-858-585-00	(C) Cushion, right (AEP, US, Canadian, UK model)
4-858-586-00	(C) Cushion, left (AEP, US, Canadian, UK model)
4-858-587-00	(B) Case, accessory (AEP, US, Canadian, UK model)
4-858-588-00	(C) Bag, protection (AEP, US, Canadian, UK model)
4-858-589-00	(A) Plate, protection (AEP, US, Canadian, UK model)
4-858-590-00	(C) Box, accessory (AEP, US, Canadian, UK model)
4-858-593-00	(A) Cushion, main weight shaft (AEP, US, Canadian, UK model)
4-858-735-00	(F) Carton (AEP, US, Canadian, UK model)

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

Specifications for Cartridge XL-15 (E model)

Type:	Moving-magnet
Frequency Response:	10 — 30, 000 Hz
Channel Separation:	25 dB at 1 kHz
Output Voltage:	4 mV at 1 kHz, 5 cm/sec, 45°
Load Impedance:	50 kΩ
Tracking Force:	1.2 — 2.5 g (1.7 g recommended)
Stylus:	Sony ND-15G (conical 0.5 mil diamond)
Weight:	5.2 g