

# PS-X55

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



## STEREO TURNTABLE SYSTEM

### SPECIFICATIONS

#### GENERAL


**Power Requirements:** 120 V ac, 60 Hz (US, Canadian model)  
220 V ac, 50/60 Hz (AEP model)  
240 V ac, 50/60 Hz (UK model)  
110 – 120 V or 220 – 240 V ac adjustable,  
50/60 Hz (E model)

**Power Consumption:** 12 W


**Dimensions:** Approx. 430 (w) x 135 (h) x 375 (d) mm  
17 (w) x 5  $\frac{3}{8}$  (h) x 14  $\frac{7}{8}$  (d) inches  
including projecting parts and controls

**Weight:** Approx. 8 kg, 17 lb 10 oz (net)  
Approx. 9.4 kg, 20 lb 12 oz  
(in shipping carton)

#### 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 UNE TRAME ET UNE MARQUE  SUR LES DIAGRAMMES SCHEMATIQUES, LES VUES EXPLOSÉES 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 DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

#### TURNTABLE

**Platter:** 31 cm (12  $\frac{1}{4}$  inches), aluminum-alloy diecast

**Motor:** Linear BSL (brushless and slotless) motor

**Drive System:** Direct drive

**Control System:** Crystal lock control, magnedisc servo control system

**Speed:** 33  $\frac{1}{3}$  rpm, 45 rpm

**Starting Characteristics:** Comes to nominal speed within a half revolution (33  $\frac{1}{3}$  rpm)

**Wow and Flutter:** 0.02 % (WRMS)  
\*0.025 % (WRMS)  
± 0.04 % (DIN)

**S/N Ratio:** 78 dB (DIN-B)

**Load Characteristics:** 0 % up to 100 g stylus force (at lead-in groove of a record)

**Speed Deviation:** Within ± 0.003 %

**Automatic System:** Lead-in, return, reject, repeat, record size selection

— Continued on page 2 —

\* This new measuring method concerns only the turntable assembly, including the platter. It excludes wow and flutter caused by the tonearm, the cartridge, or the record.

Measured by obtaining signal from magnetic pick-up head.

# SONY®

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# SERVICE MANUAL

# PS-X55

## TONEARM

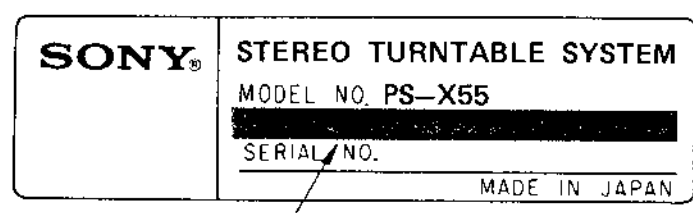
Type: Statically balanced  
Pivot-to-stylus Length: 216.5 mm (8 1/2 inches)  
Overall Arm Length: 300 mm (11 7/8 inches)  
Overhang: 16.5 mm (5/8 inches)  
Tracking Error: +3° to -1°  
Stylus Force Adjustment Range: 0 - 2.5 g  
Cartridge Shell Weight: 5 g  
Cartridge Weight Range: 7.5 - 11.5 g  
(including supplied headshell) 11 - 15 g (with extra weight)

## CARTRIDGE

Type: Moving-magnet  
Frequency Response: 10 - 30,000 Hz  
Channel Separation: 25 dB at 1 kHz  
Output Voltage: 3 mV at 1 kHz, 5 cm/sec, 45°  
Load Impedance: 50 kΩ - 100 kΩ  
Tracking Force: 1.0 - 2.0 g (1.5 g recommended)  
Stylus: Sony ND-200E  
Elliptical (0.3 x 0.8 mil), nude diamond  
Weight: 3.5 g

## MODEL IDENTIFICATION

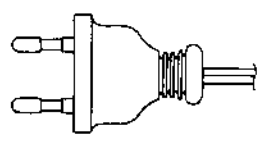
- Specification Label -



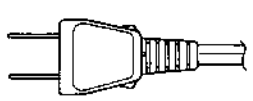
US, Canadian model : AC 120V 60Hz 12W  
AEP model : AC 220V ~50/60Hz 12W  
UK model : AC 240V ~50/60Hz 12W  
E model : AC 110-120V, 220-240V ~50/60Hz 12W

## - Power Cord -

E model: euro-plug 1-551-530-00

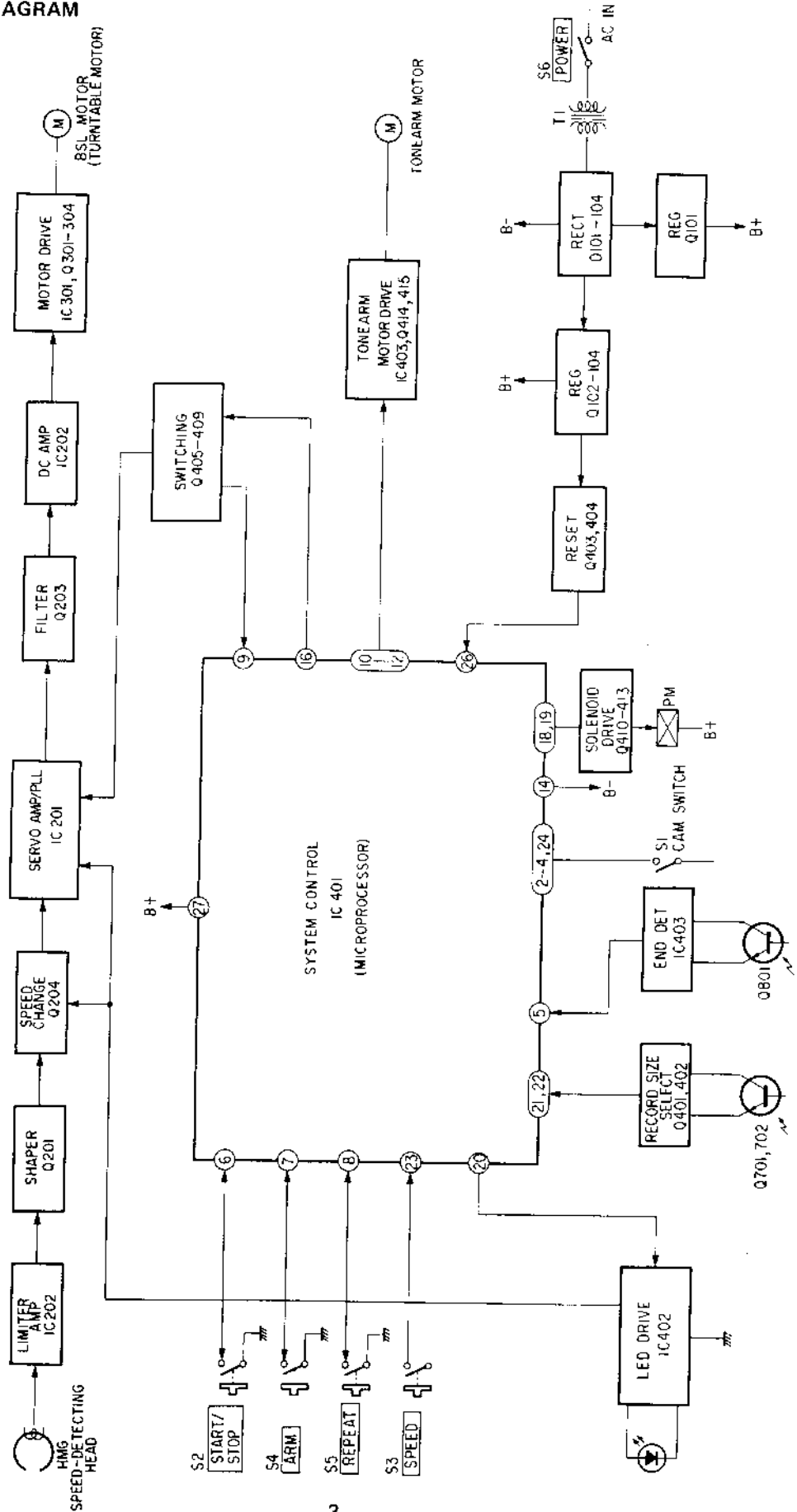


E model: parallel-blade plug 1-551-473-31



# SECTION 1 OUTLINE

## 1-1. BLOCK DIAGRAM

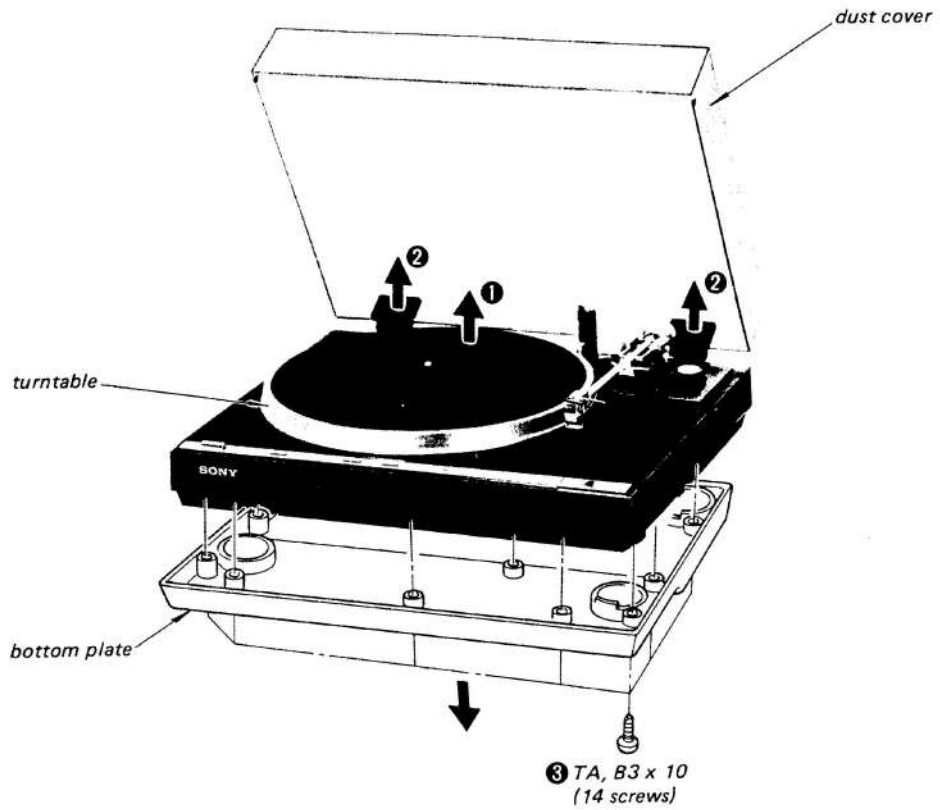


**SECTION 2  
DISASSEMBLY**

Note: Follow the disassembly procedure in the numerical order given.

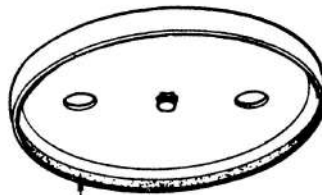
**TURNTABLE/DUST COVER/BOTTOM PLATE REMOVAL**

- ① : TURNTABLE
- ② : DUST COVER
- ③ : BOTTOM PLATE



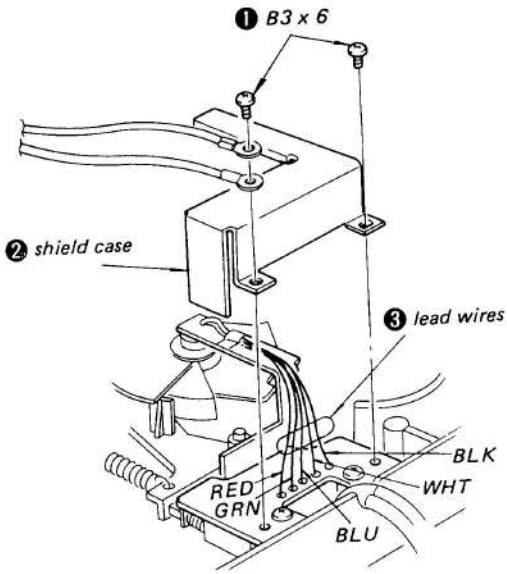
**SERVICING NOTE**

*Bottom view of turntable*

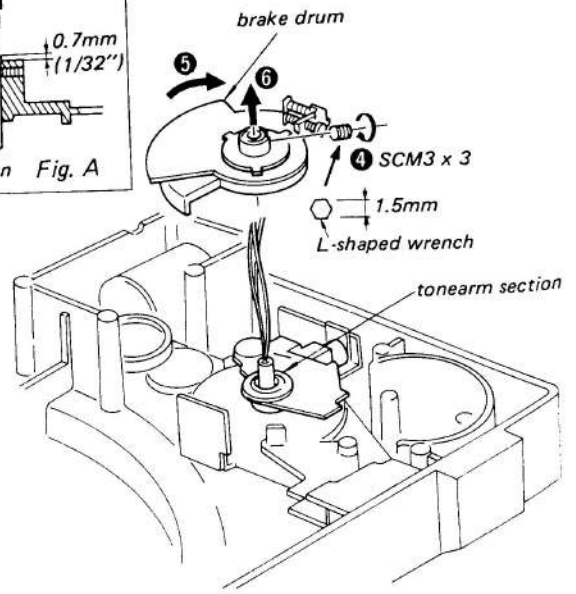
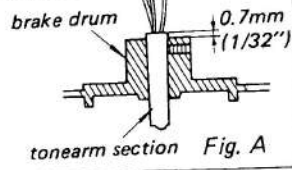


*Be sure not to spoil the magnetic coating (dark brown color).*

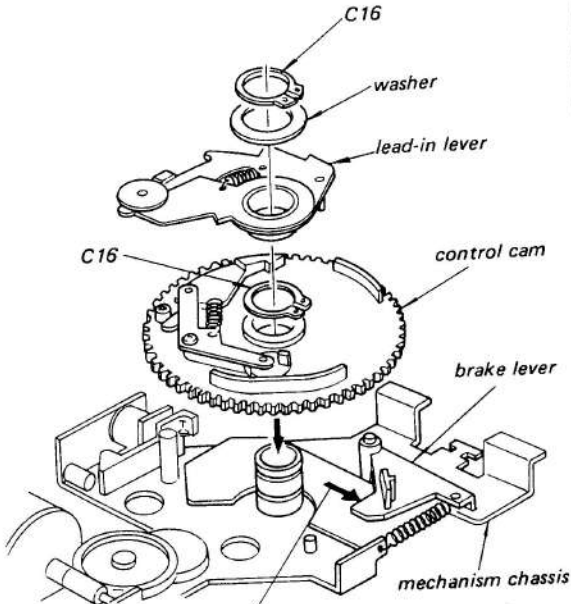
## TONEARM SECTION REMOVAL



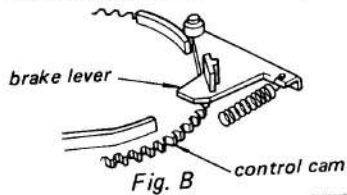
### NOTE ON BRAKE DRUM INSTALLATION



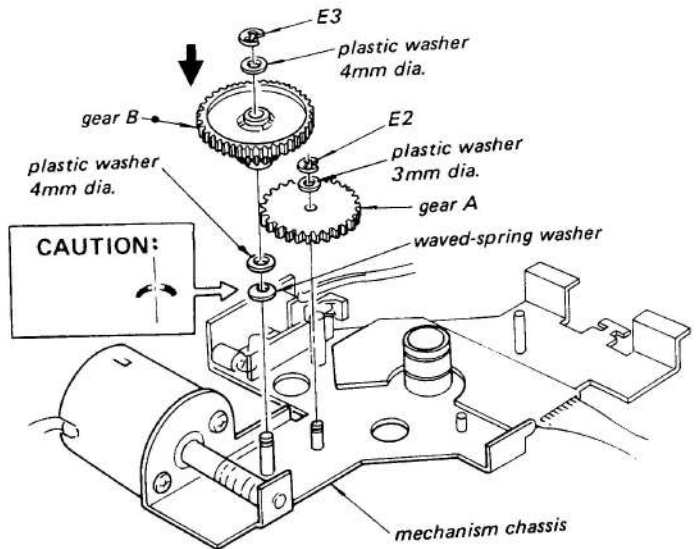
## CONTROL CAM/LEAD-IN LEVER INSTALLATION



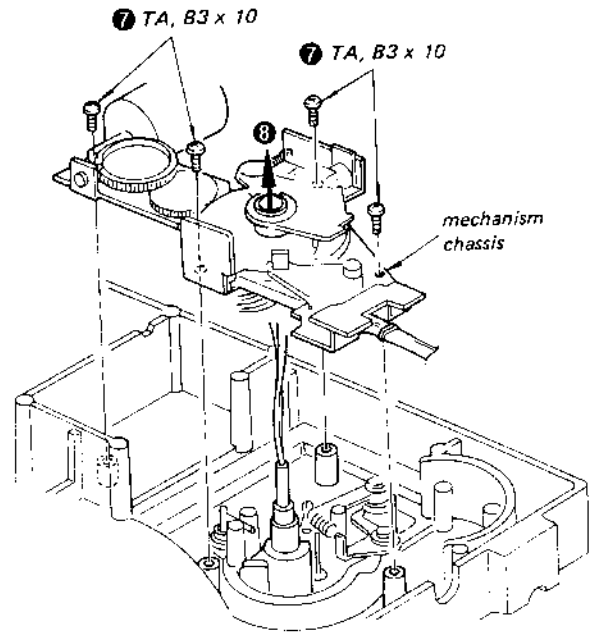
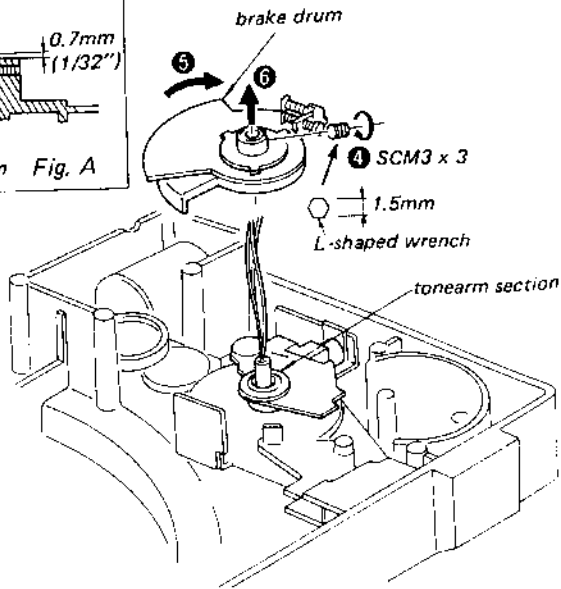
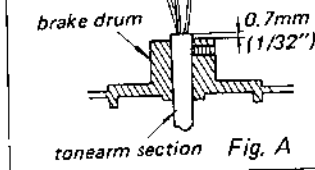
Push the brake lever and insert the control cam as shown in Fig. B.



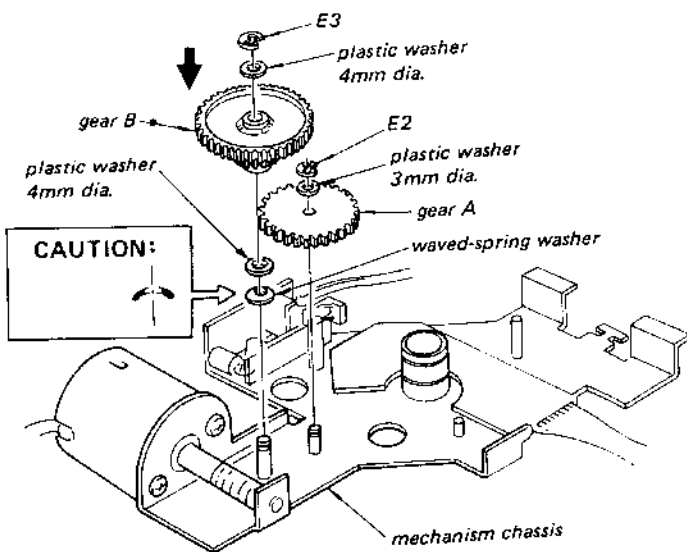
## GEAR A/GEAR B INSTALLATION



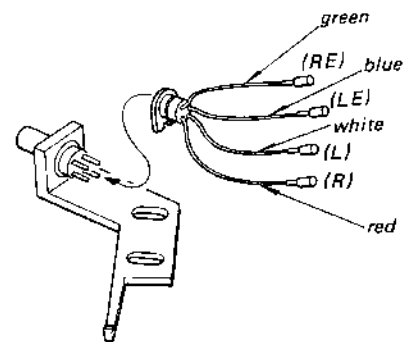
**NOTE ON BRAKE DRUM INSTALLATION**



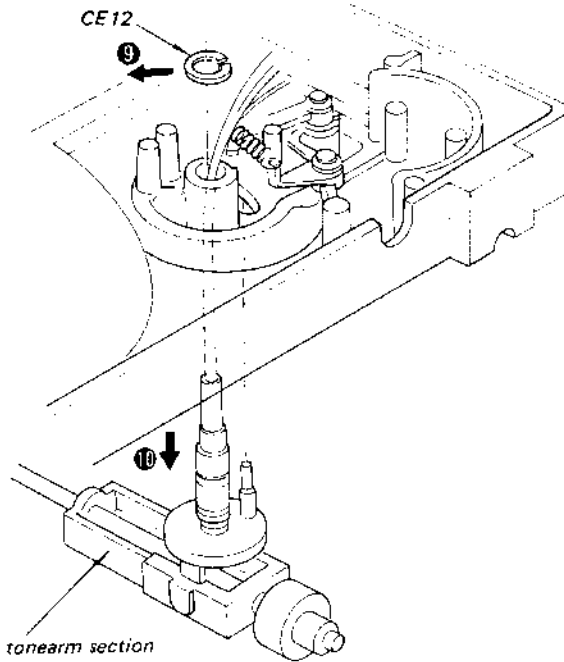
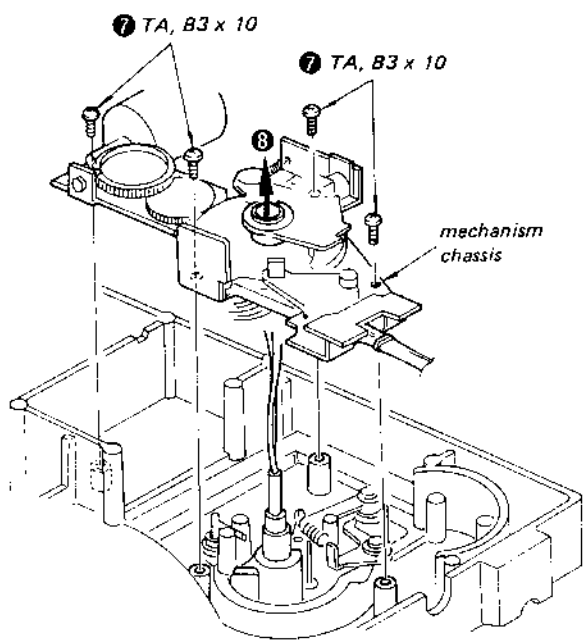
**GEAR A/GEAR B INSTALLATION**



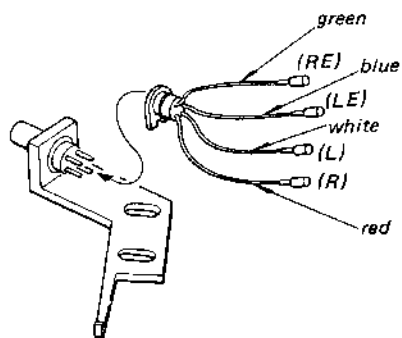
**LEAD WIRE CONNECTION**



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

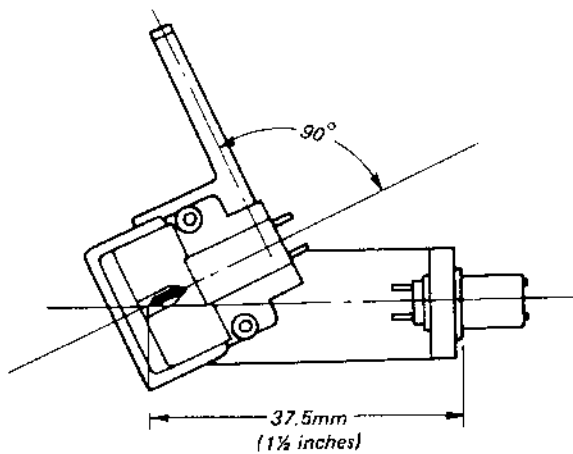


### LEAD WIRE CONNECTION

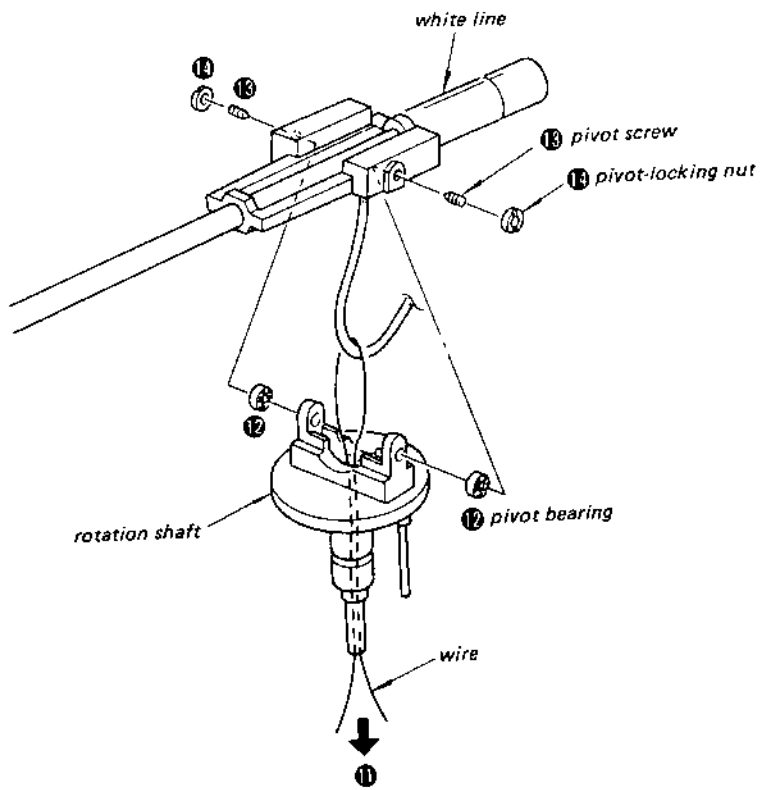
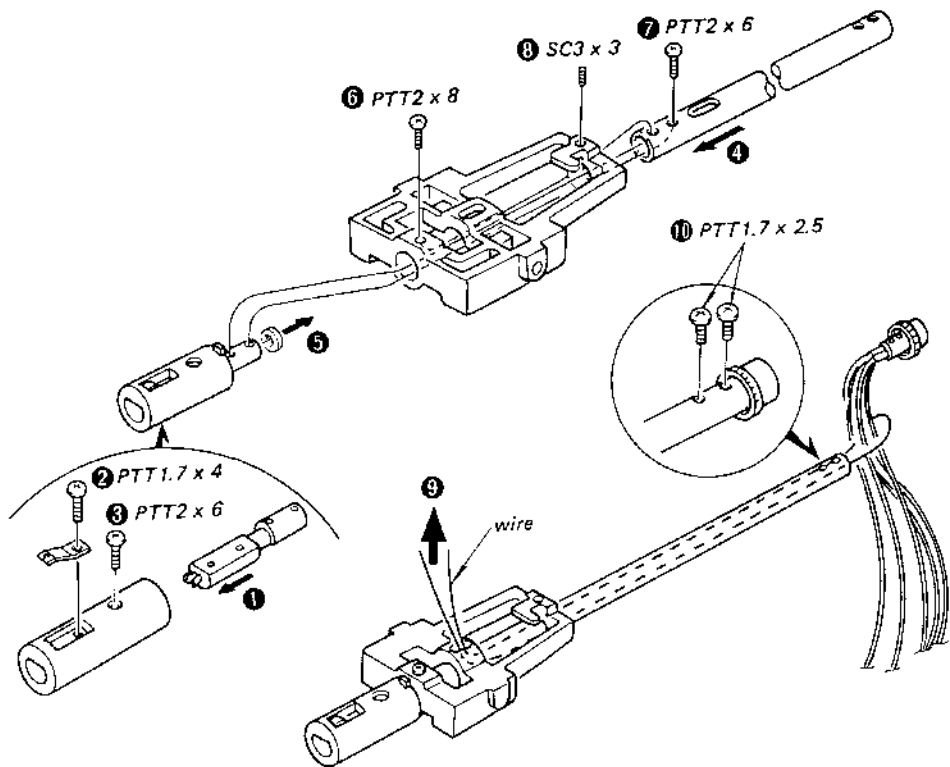


blue: left channel (ground)  
white: left channel (signal)  
green: right channel (ground)  
red: right channel (signal)

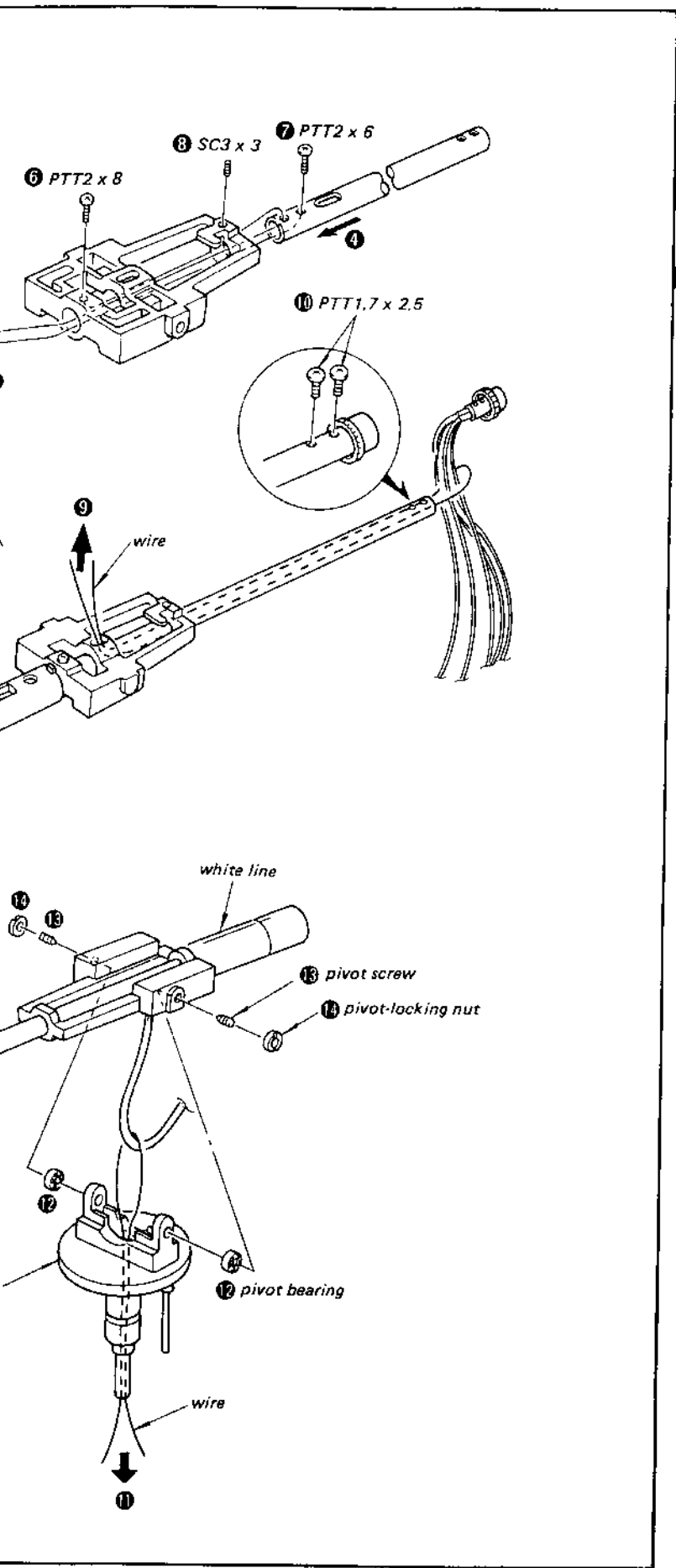
### CARTRIDGE INSTALLATION



# TONEARM ASSEMBLY







**Longitudinal Sensitivity Adjustment**

1. Make the longitudinal balance adjustment on the tonearm.
2. Repeating the following procedures, adjust the pivot screw and the pivot-locking nut.
  - a. When the 70 mg weight is placed on the shell, the tonearm sinks more than 5 mm (measured at stylus-tip.)
  - b. When the weight is removed, the tonearm returns horizontally.

**Note:** Rotate the left and right pivot screws by equal numbers of turns.

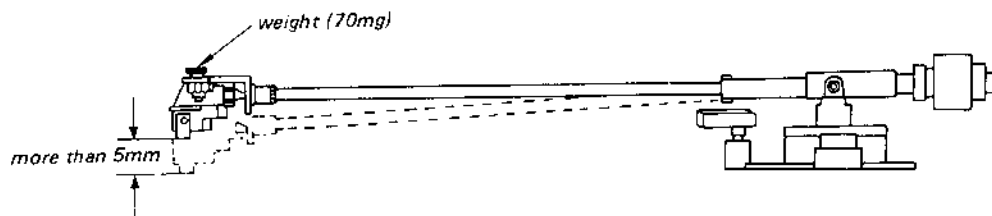
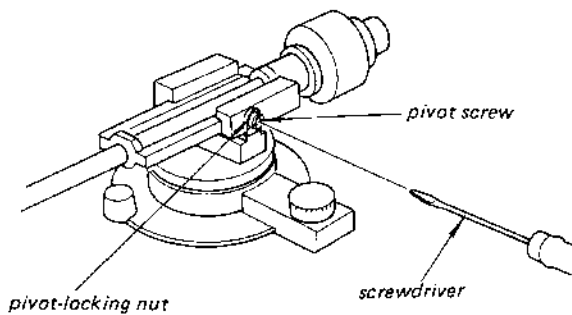


SECTION 3  
ADJUSTMENTS

## Longitudinal Sensitivity Adjustment

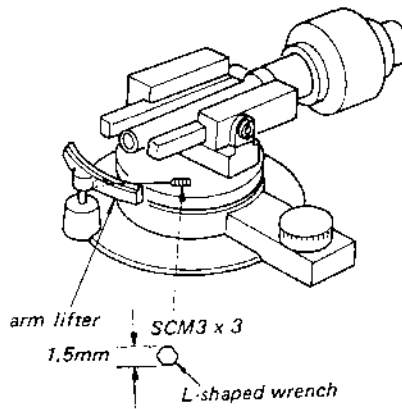
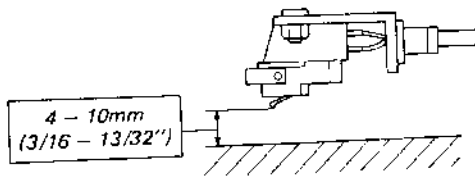
1. Make the longitudinal balance adjustment of tonearm.
2. Repeating the following procedures, adjust the pivot screw and the pivot-locking nut.
  - a. When the 70 mg weight is placed on the top of the shell, the tonearm sinks more than 5 mm (measured at stylus-tip.)
  - b. When the weight is removed, the tonearm returns horizontally.

**Note:** Rotate the left and right pivot screws by same numbers of turns.



### Stylus Height Adjustment

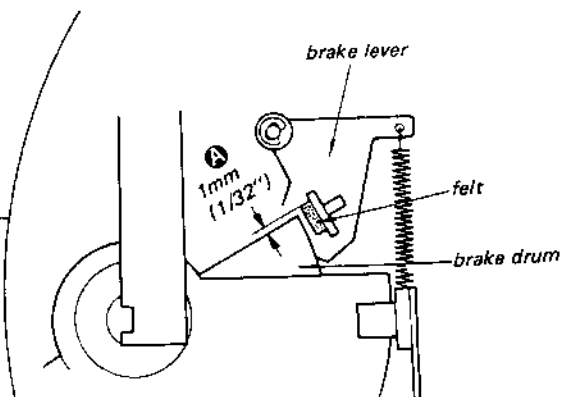
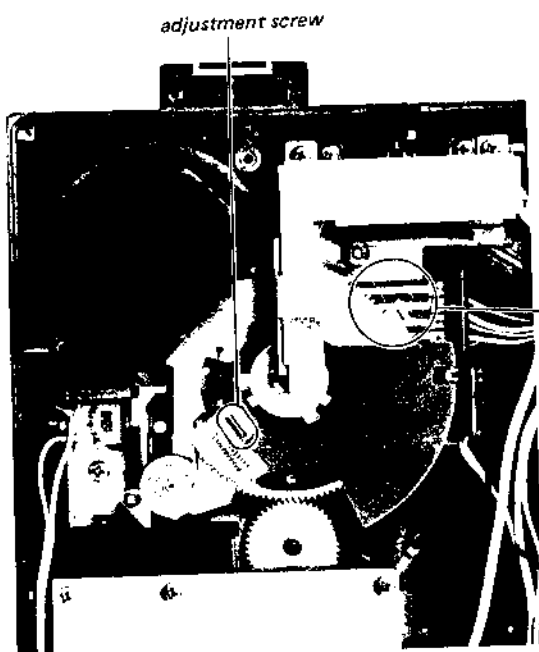
1. Bring the tonearm above the record.
2. Lift the arm lifter up and make sure that the clearance between the stylus tip and the record is 4 – 10 mm (3/16 – 13/32 inches).
3. If necessary, loosen the set screw and adjust the arm lifter height.



### Automatic Return Position Adjustment

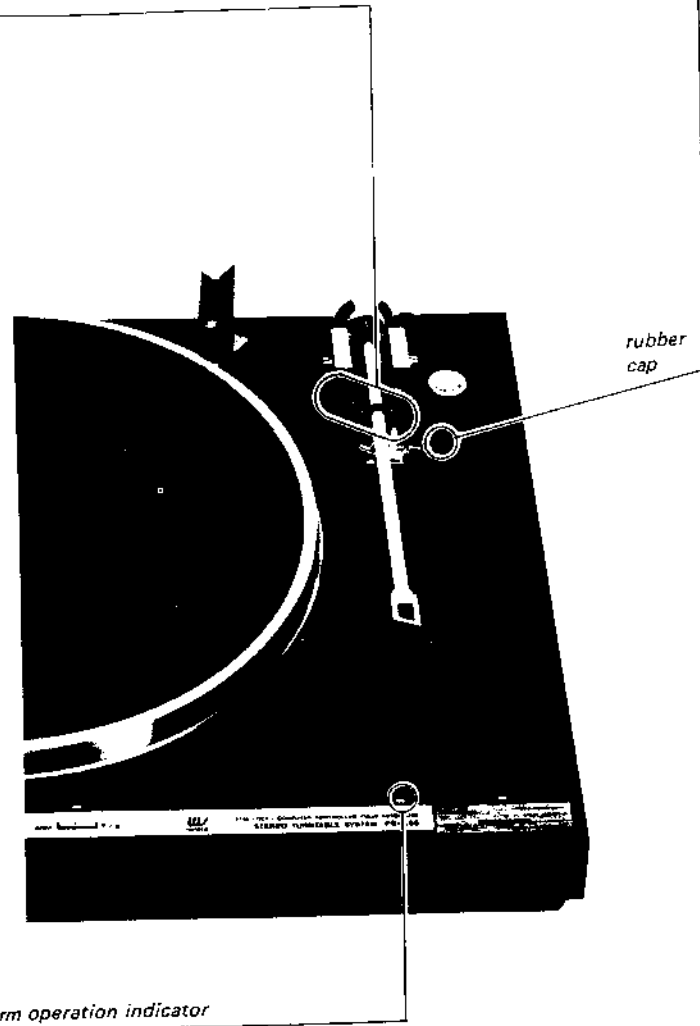
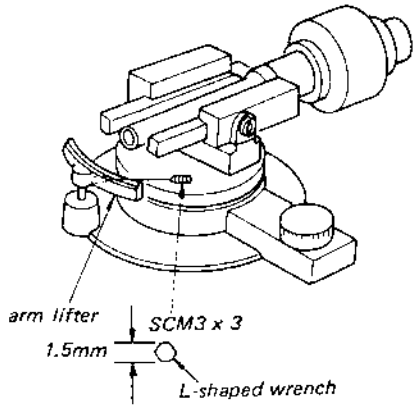
1. Confirm that clearance **A** is 1 mm (1/32 inches) as shown below.
2. Set the SPEED to 33 rpm.
3. Set the stylus on the groove of the test record (YFSC-16).
4. Adjust the adjustment screw so that the count is 10 – 13 just when the tonearm operation indicator first lights up.

Turning direction	Count of return-point
clockwise	large figure
counterclockwise	small figure



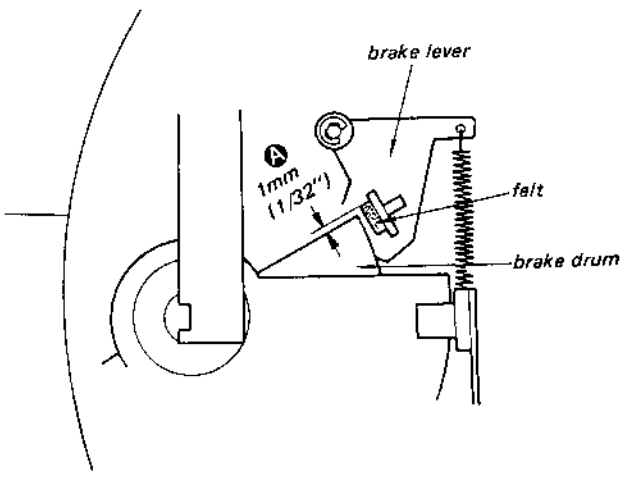
tonearm opera

St  
1.  
2.  
3.



4. Adjust the adjustment screw so that the count is 10 - 13 just when the tonearm operation indicator first lights up.

Turning direction	Count of return-point
clockwise	large figure
counterclockwise	small figure



### Stylus Drop-point Adjustment

1. Remove the rubber cap.
2. Make sure that the stylus drops on the specified point of the test record.  
test record: YFSC-16

Record size	Count of drop-point
30 (12")	6 to 16
17 (7")	14 to 31

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

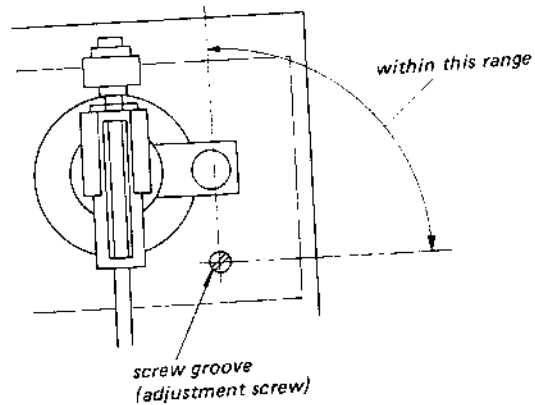
To change the drop-point inward:

Turn the adjustment screw slightly clockwise.  
(The figure of the drop-point will be large.)

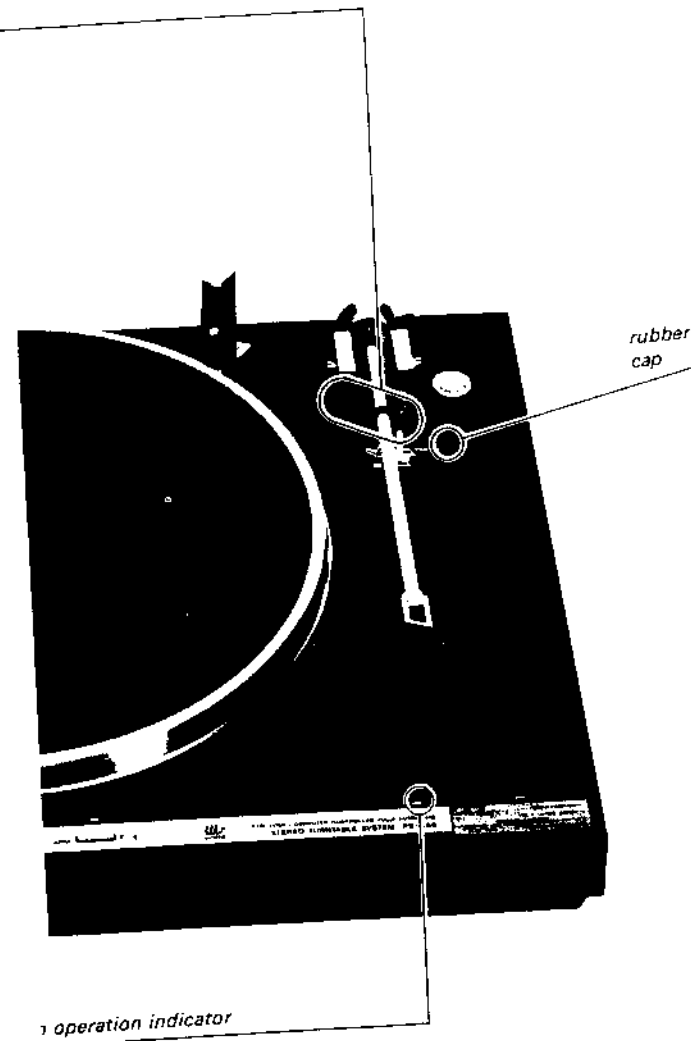
To change the drop-point outward:

Turn the adjustment screw slightly counter-clockwise.  
(The figure of the drop-point will be small.)

**Note 1:** Confirm that the screw groove is positioned within the range shown below.



**Note 2:** Once it is properly adjusted with a 30 cm (12") record, the drop-point will be correct for 17 cm (7") records.



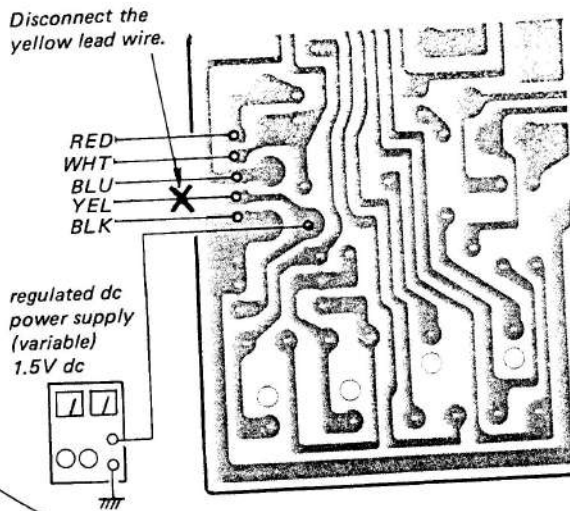
## Hall Device Gain/Motor Amp Offset Adjustment

### Setting:

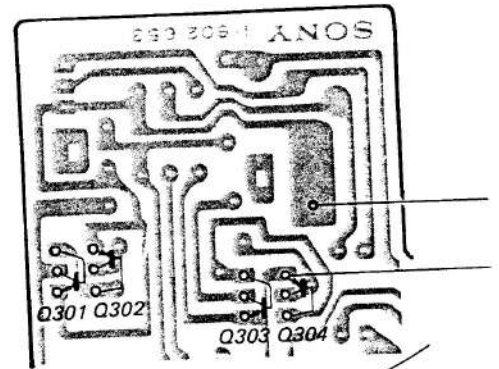
POWER switch: ON

(Remove the turntable before turning the switch on.)

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



2. Connect oscilloscope to H1 and adjust RV301 for 5Vp-p reading on oscilloscope.
3. Connect oscilloscope to H2 and adjust RV302 for 5Vp-p reading on oscilloscope.
4. Connect VTVM or oscilloscope to H1 and adjust RV303 for 0V dc VTVM reading or for the waveform on oscilloscope as shown below.
5. Connect VTVM or oscilloscope to H2 and adjust RV304 for 0V dc VTVM reading or for the waveform on oscilloscope as shown below.



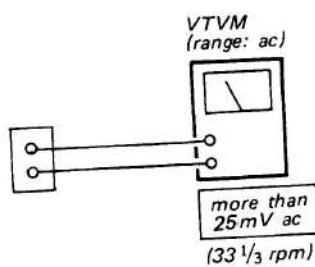
## Speed Detecting Head Output Level Adjustment

### Setting:

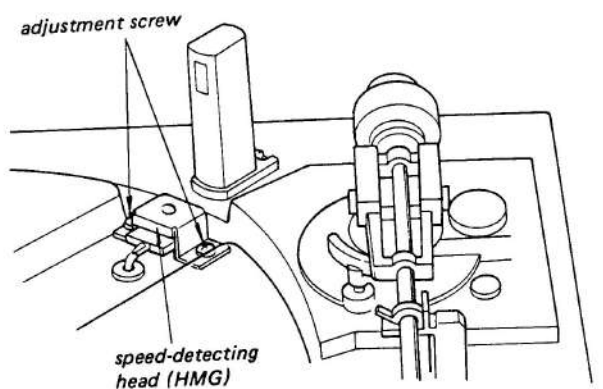
POWER switch: ON

1. Adjust the position of the head so that the VTVM reading is more than 25 mV ac at  $33\frac{1}{3}$  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 is more than 0.3 mm.



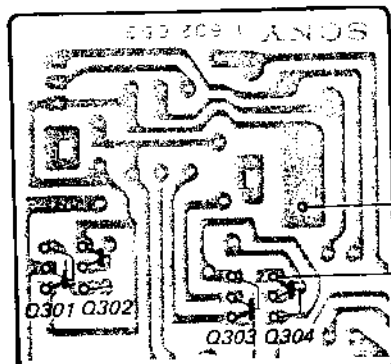
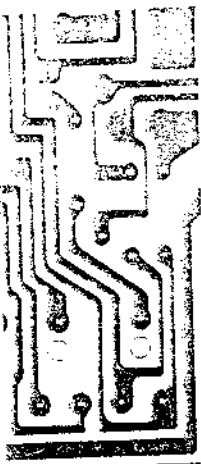
— Adjustment Location —



Adjustment

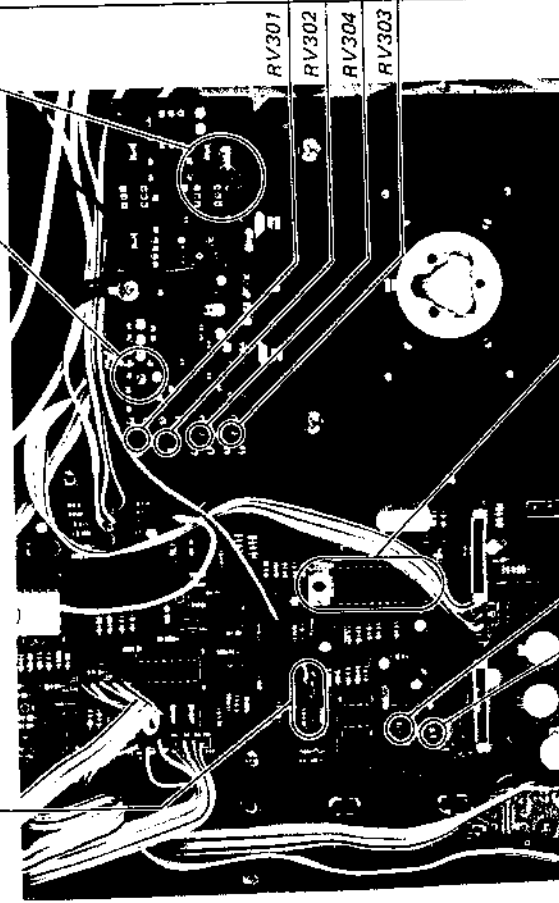
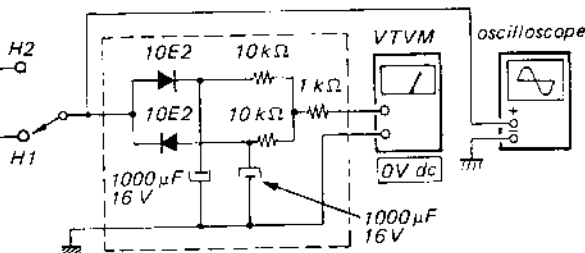
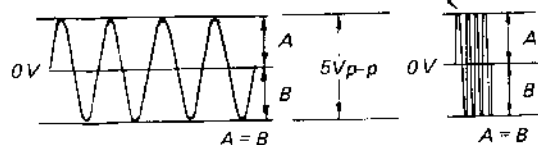
ing the switch  
and connect  
shown below.

2. Connect oscilloscope to H1 and adjust RV301 for 5Vp-p reading on oscilloscope.
3. Connect oscilloscope to H2 and adjust RV302 for 5Vp-p reading on oscilloscope.
4. Connect VTVM or oscilloscope to H1 and adjust RV303 for 0V dc VTVM reading or for the waveform on oscilloscope as shown below.
5. Connect VTVM or oscilloscope to H2 and adjust RV304 for 0V dc VTVM reading or for the waveform on oscilloscope as shown below.



Waveform on Oscilloscope:

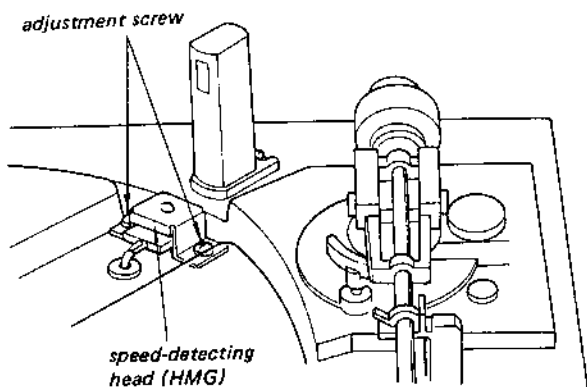
Note: Set the sweep time longer for easy waveform checking.



Adjustment

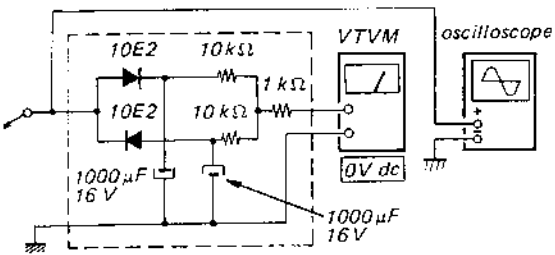
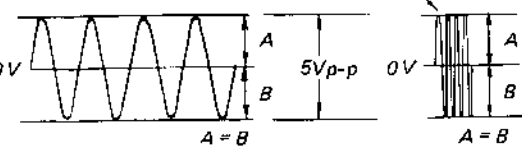
at the VTVM  
3 rpm.  
ch the turn-  
coated rim and  
a 0.3 mm.

— Adjustment Location —



Waveform on Oscilloscope:

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

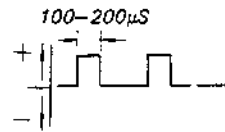


**Speed Adjustment**

**Setting:**

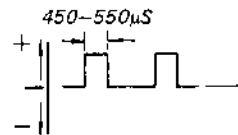
POWER switch: ON

1. Set the SPEED to 45 rpm.
2. Adjust RV202 for specified waveform as shown on the oscilloscope.

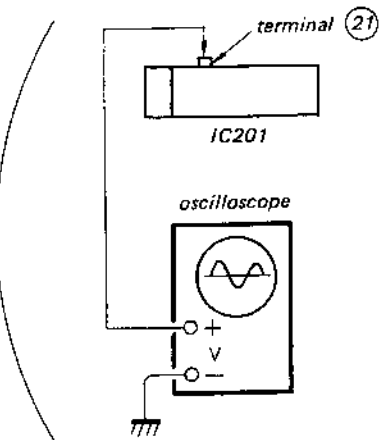


Note: The waveform should appear to positive side.

3. Set the SPEED to 33 rpm.
4. Adjust RV201 for specified waveform as shown on the oscilloscope.

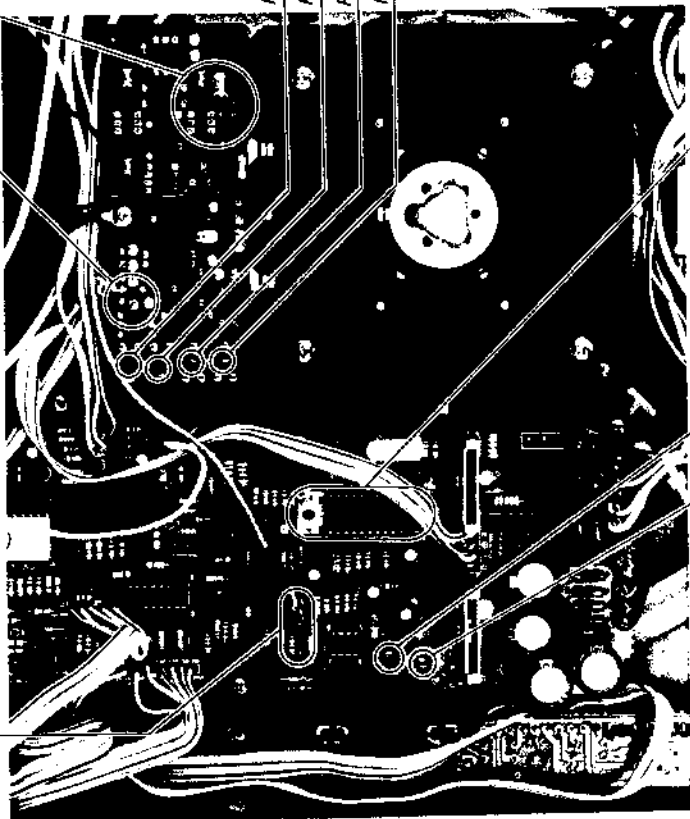


Note: The waveform should appear to positive side.



RV202

RV201





fied waveform as shown

te: The waveform should appear to positive side.

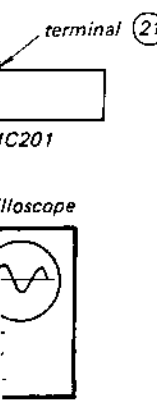
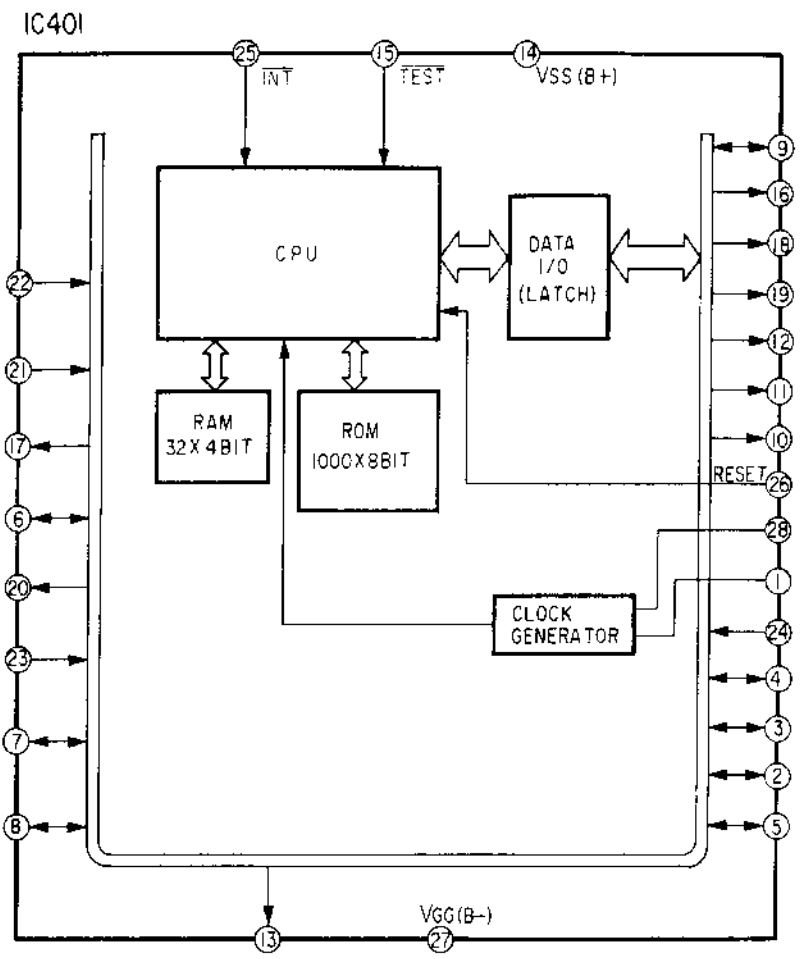
fied waveform as shown

te: The waveform should appear to positive side.

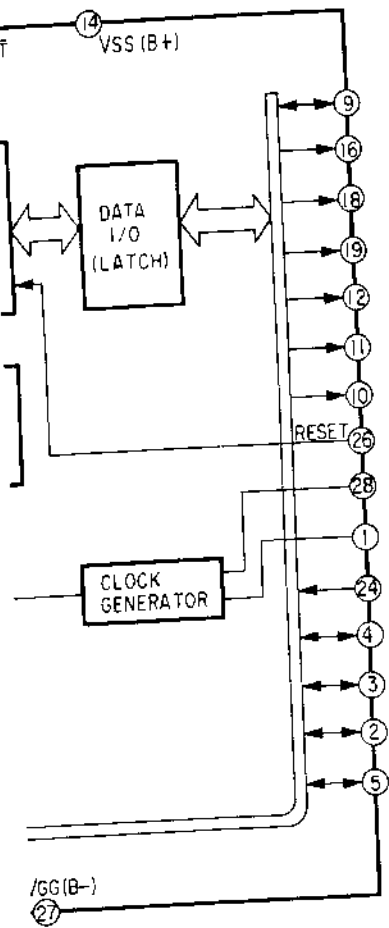
terminal (21)

IC201

illoscope








# PS-X55 PS-X55



SECTION 4  
DIAGRAMS


Note:


- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$  :  $\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms,  $\frac{1}{4}\text{W}$  unless otherwise noted.  $\text{k}\Omega$  :  $1000\Omega$ ,  $\text{M}\Omega$  :  $1000\text{k}\Omega$
-  : fusible resistor.
-  : adjustment for repair.
-  : B+ bus.
-  : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a VOM (20k $\Omega$ /V).  
no mark: When the POWER switch (S6) is "ON" and the tonearm is on the arm rest.
- Voltage variations may be noted due to normal production tolerances.
- Switch

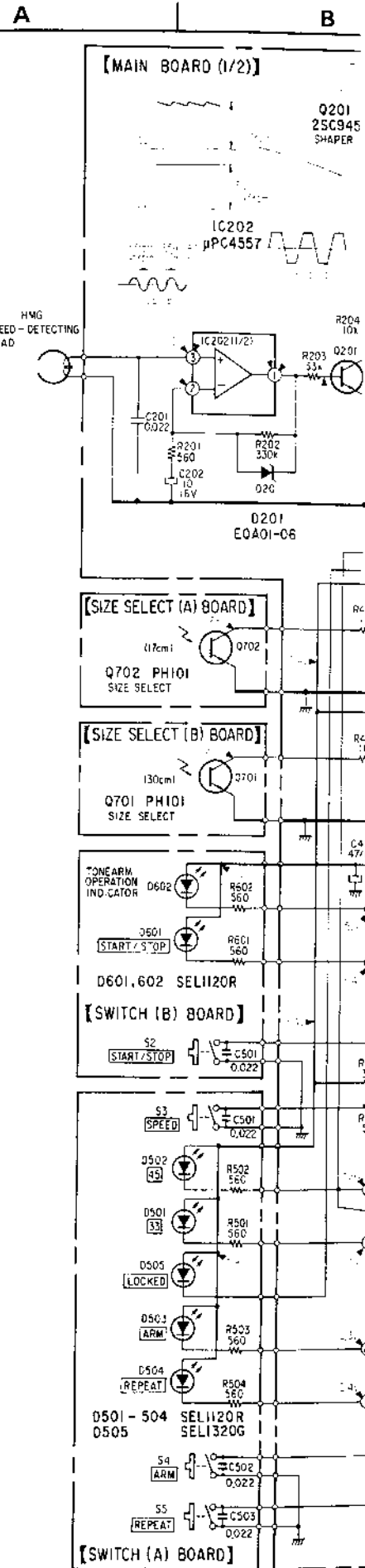
Ref. No.	Switch	Position
S1	CAM SWITCH	OFF
S2	START/STOP	OFF
S3	SPEED	OFF
S4	ARM	OFF
S5	REPEAT	OFF
S6	POWER	OFF
S7	MUTING	STOP

- ※ : R438

US model: serial No. up to 801,000	10k $\Omega$
AEP model: serial No. up to 501,100	
UK model: serial No. up to 601,000	
US model: serial No. 801,001 and later	deleted
AEP model: serial No. 501,101 and later	
UK model: serial No. 601,001 and later	
Canadian model	
E model	

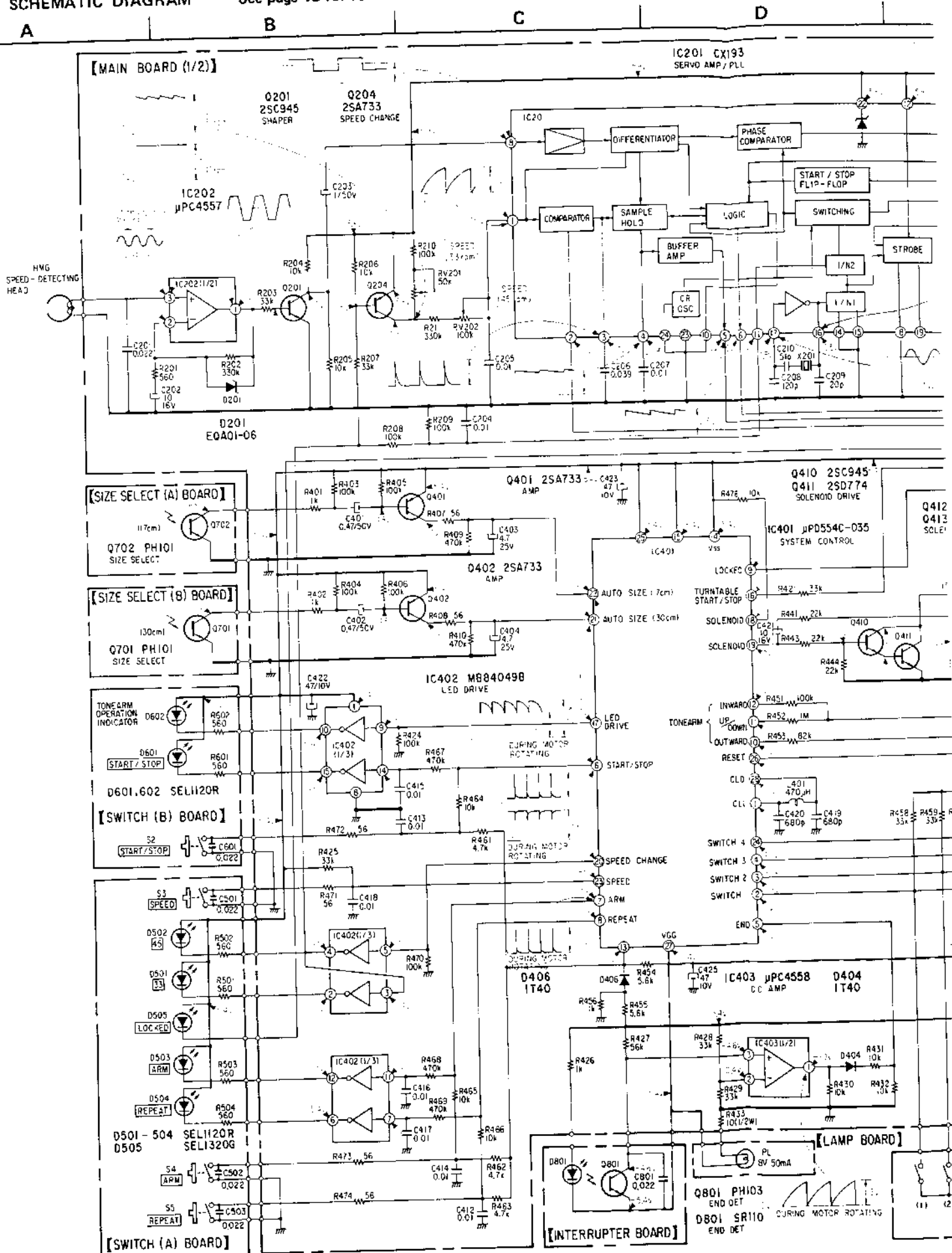
Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

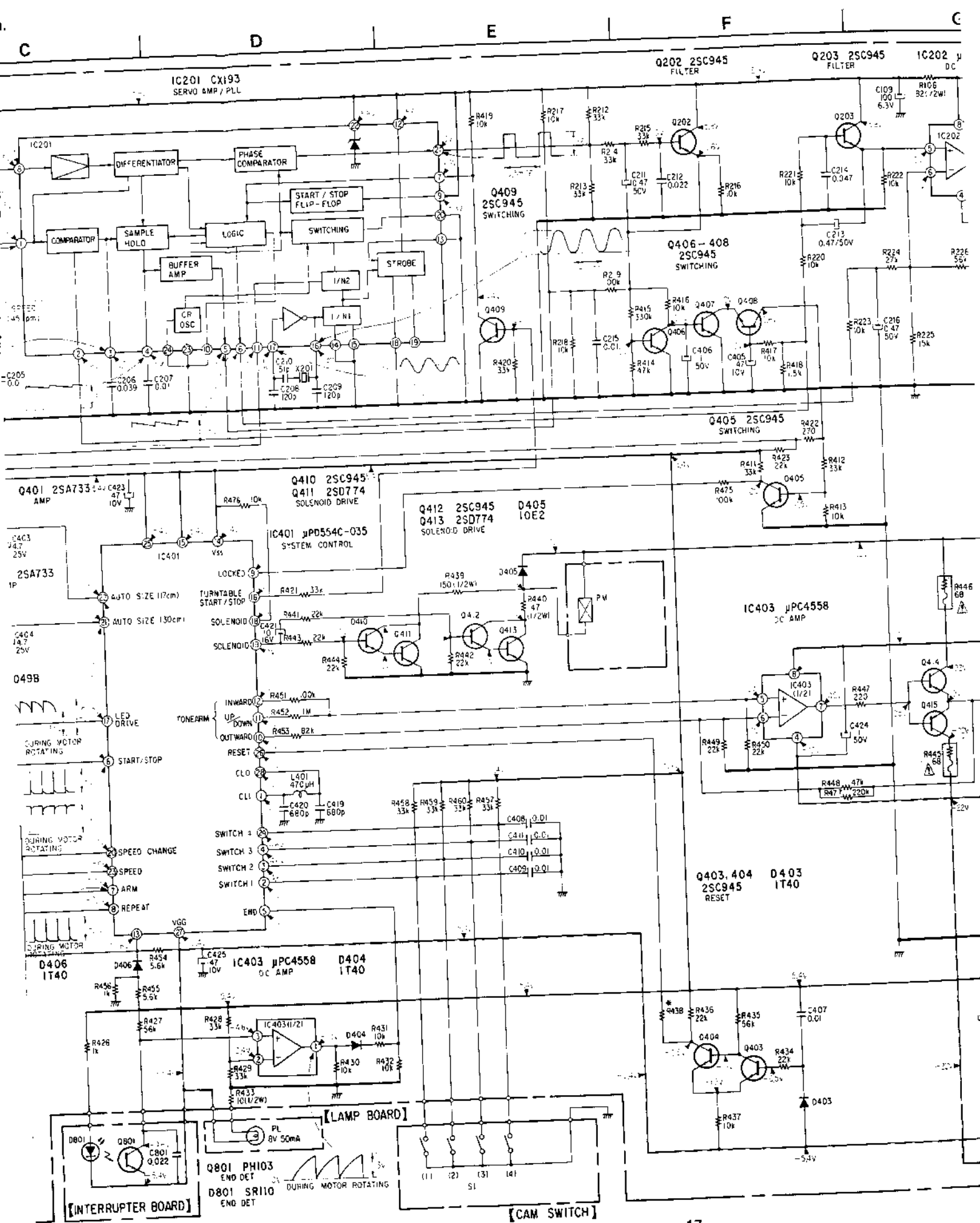
Note: Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



4-1. SCHEMATIC DIAGRAM

See page 13 for IC401 block diagram.





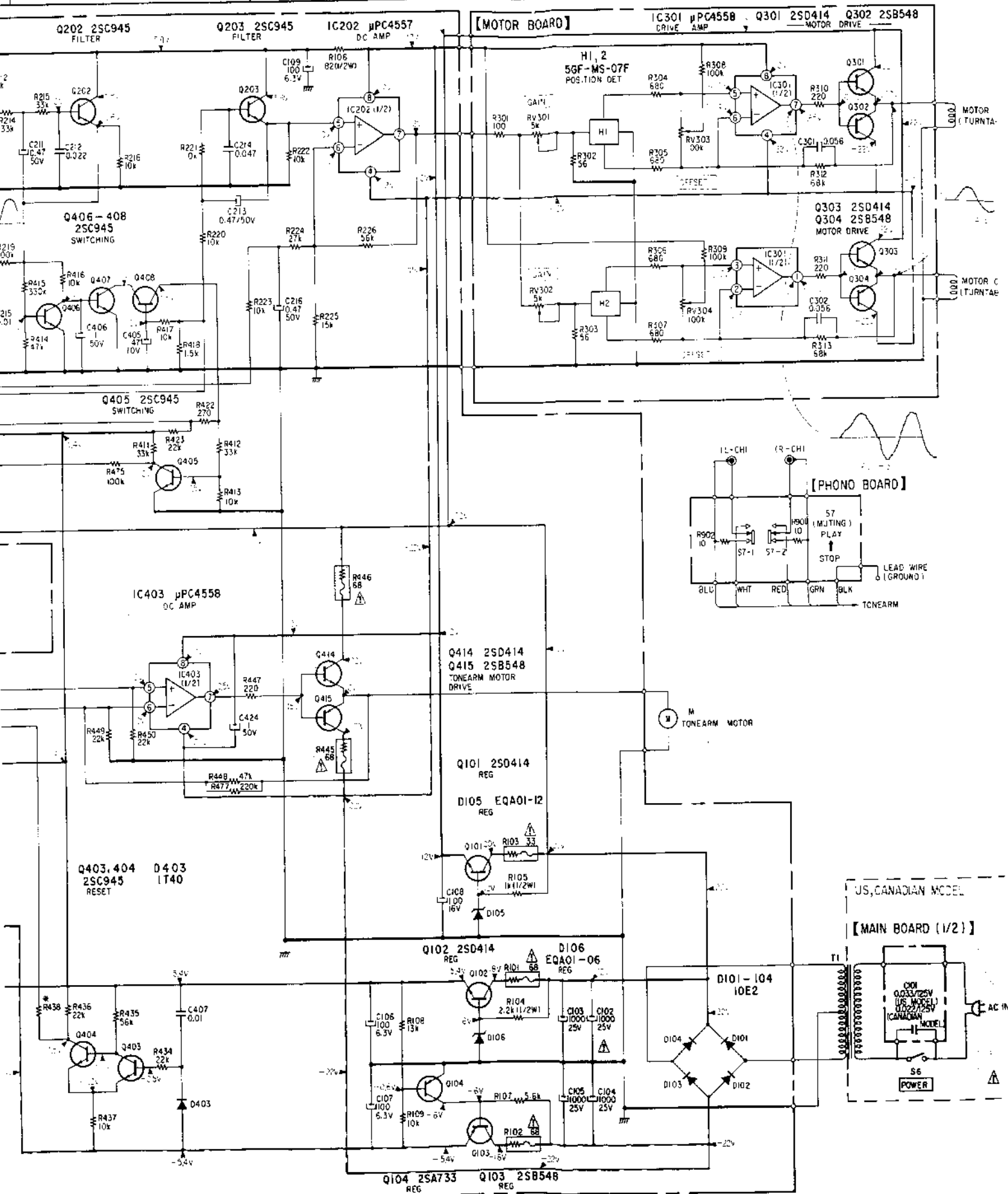
# PS-X55 PS-X55

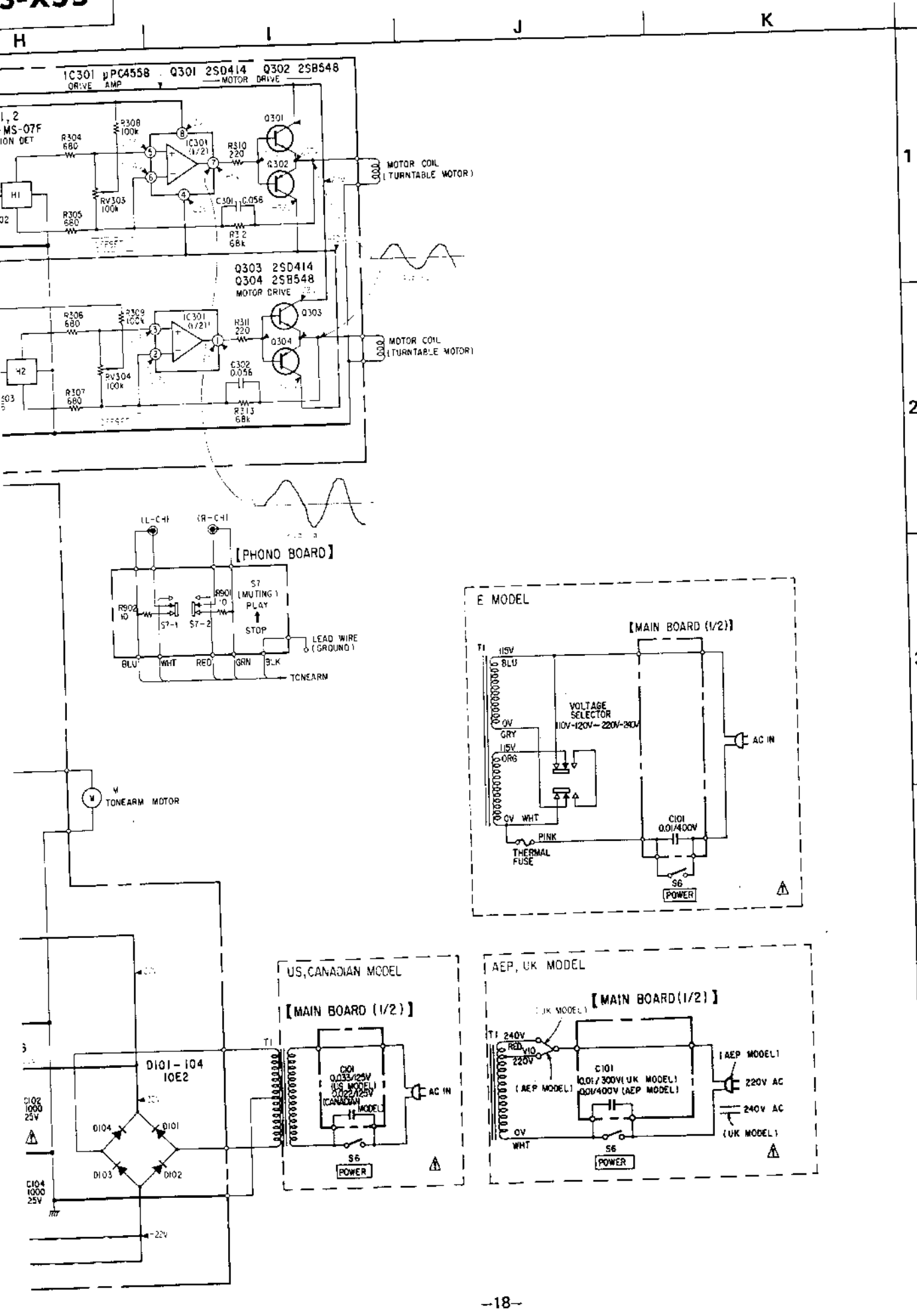
F

G

H

I

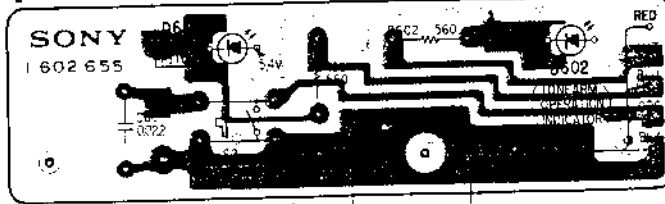




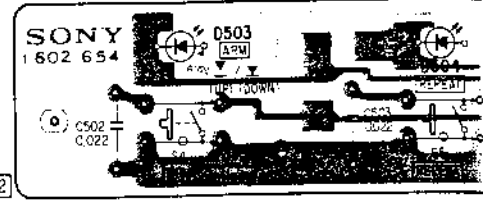
4-2. MOUNTING DIAGRAM - Conductor Side -  
See page 25 for the replacement semiconductors.

	A	B	C	D
Q		415 414		
IC	IC403 IC401	401 801	IC402 702 701	201 405 408 407 406 409 202
D	404 601 403	406 801	602	503 201 504

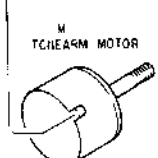
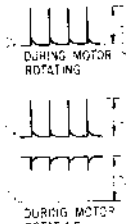
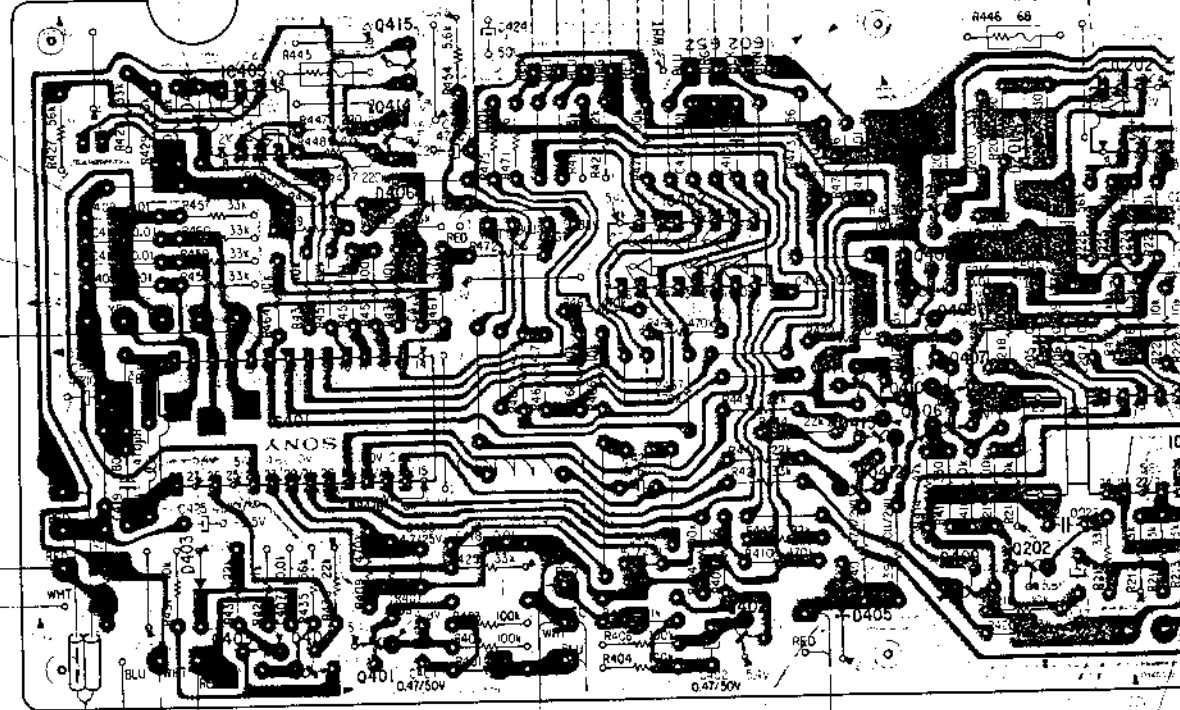
[SWITCH (B) BOARD]



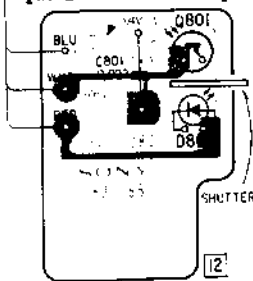
[SWITCH (A) BOARD]



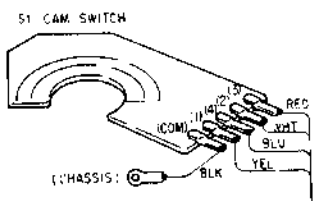
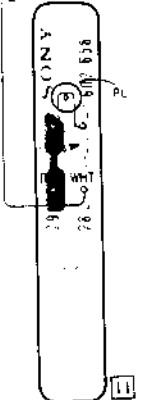
[MAIN BOARD]



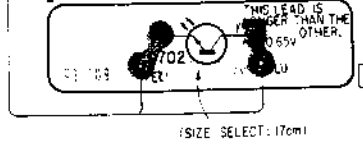
[INTERRUPTER BOARD]



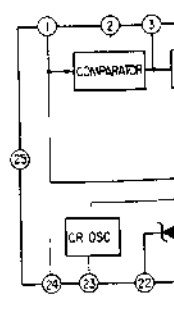
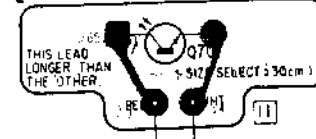
[LAMP BOARD]



[SIZE SELECT (A) BOARD]



[SIZE SELECT (B) BOARD]



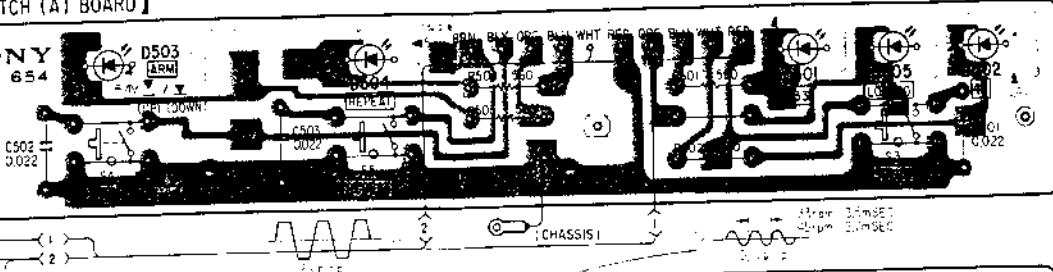


**PS-X55 PS-X55**

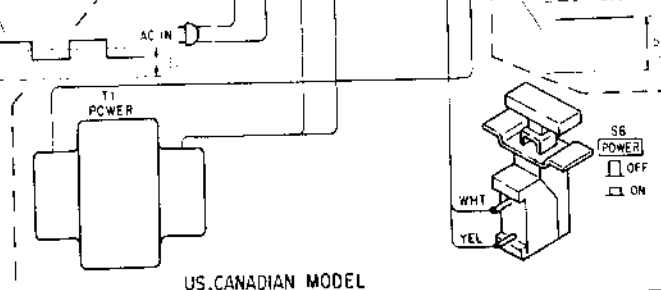
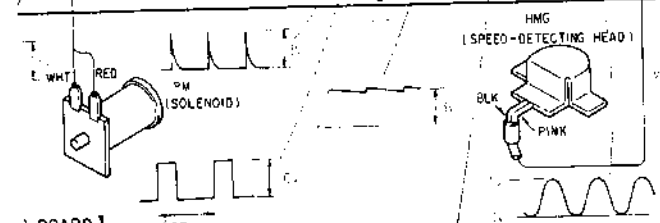
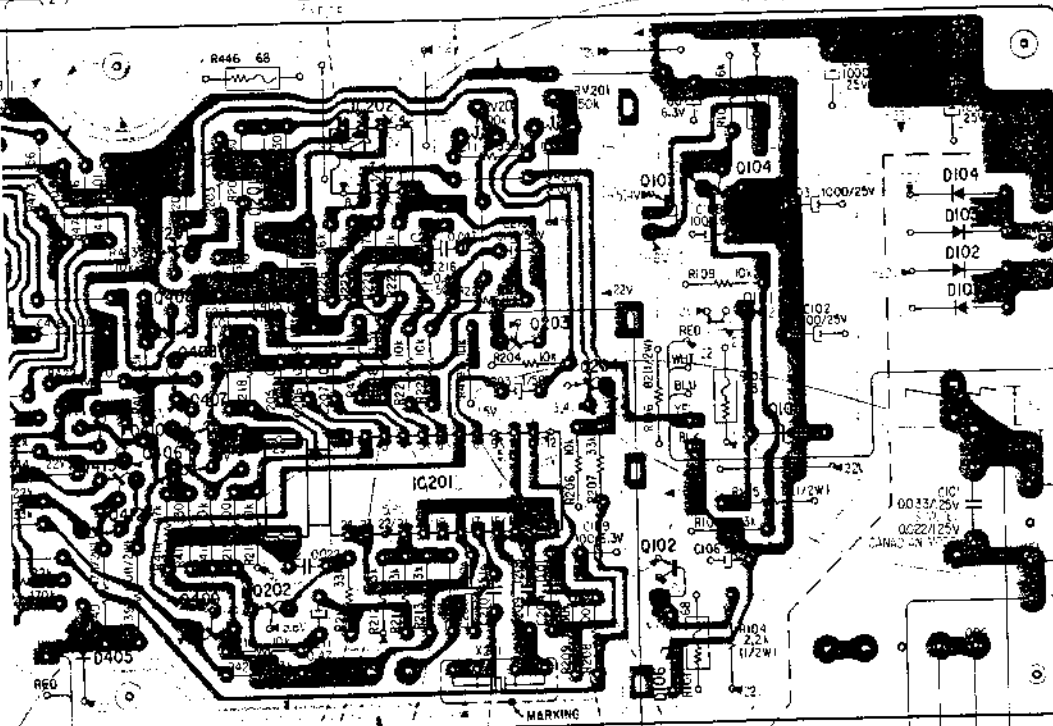
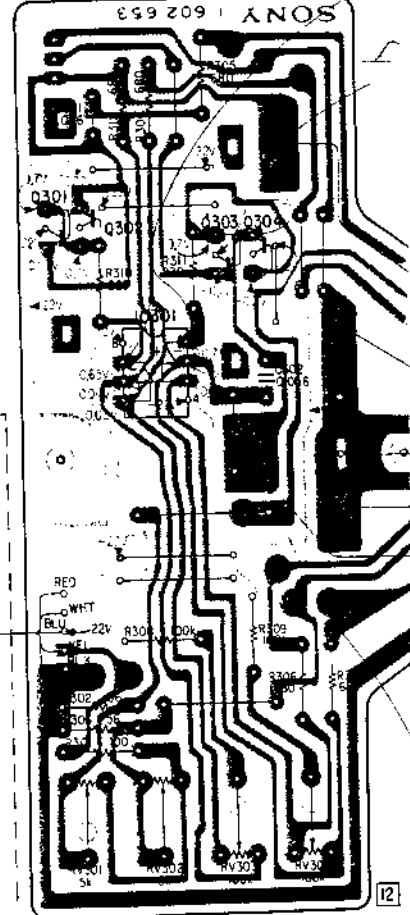
US model (Serial No. 801,001 and I.  
 AEP model (Serial No. 501,101 and I.  
 UK model (Serial No. 601,001 and I.  
 Canadian model  
 E model F | G

	D	E	F	G
	IC202	IC201	IC301	IC302
	203	204	303	304
	.103	.102	104	101
	501	505	502	
	105		104	103
			102	101
	106			

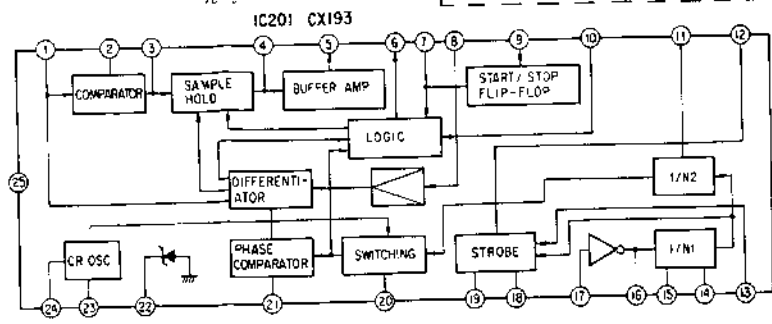
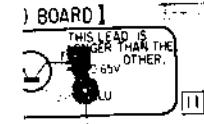
**TCH (A) BOARD**



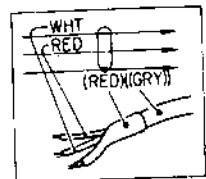
**[MOTOR BOARD]**



**[PHONO BOARD]**



**Note:**  
 • Color code of sleeving over the end of the jacket.



LEAD WIRE  
 1 GROUND 1

• : B+ pattern

US model (Serial No. 801,001 and later)  
 AEP model (Serial No. 501,101 and later)  
 UK model (Serial No. 601,001 and later)  
 Canadian model  
 E model

F

G

H

I

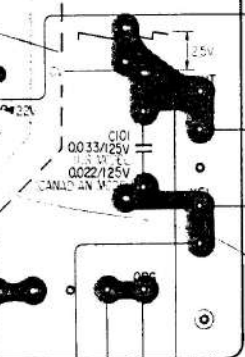
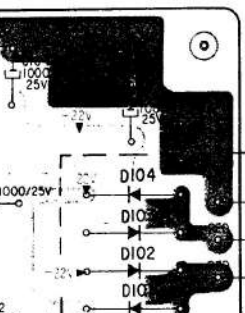
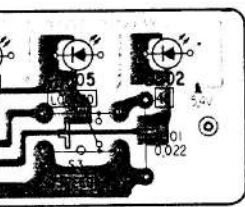
301 302

IC301 303 304

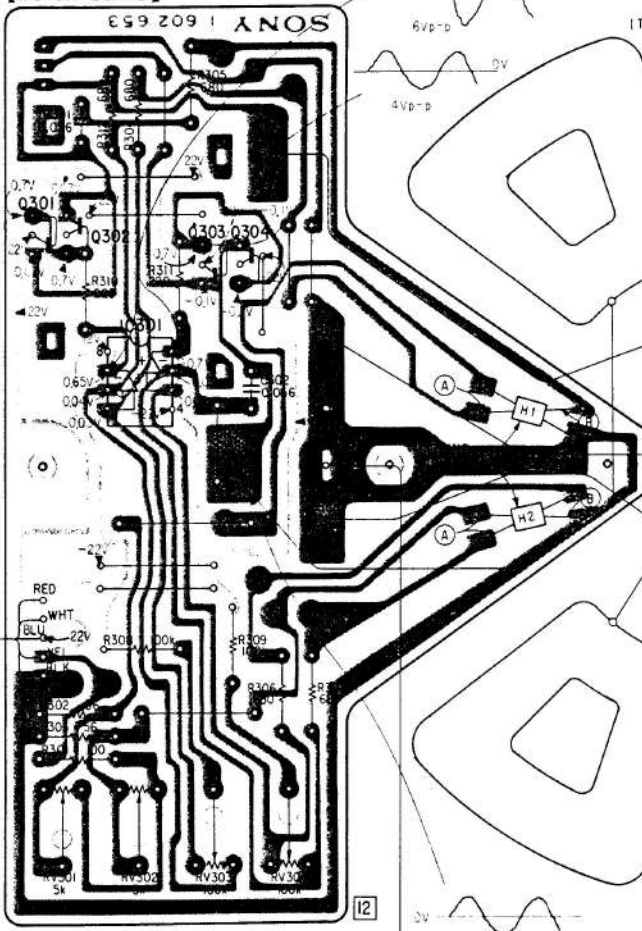
Q  
IC

D

505 502  
104  
103  
102  
101

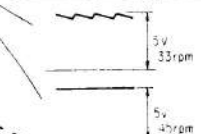


**[MOTOR BOARD]**

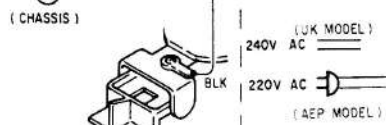
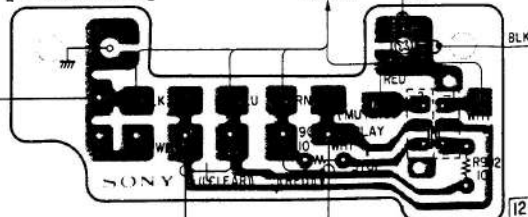


MOTOR COIL  
(TURNTABLE MOTOR)

(A) IS LONGER THAN (B).

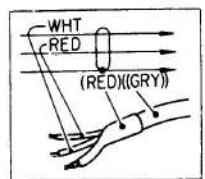


**[PHONO BOARD]**

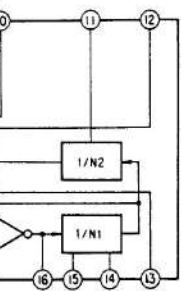


US, CANADIAN MODEL

**Note:**  
 • Color code of sleeving over the end of the jacket.



LEAD WIRE (GROUND)  
 • B+ pattern



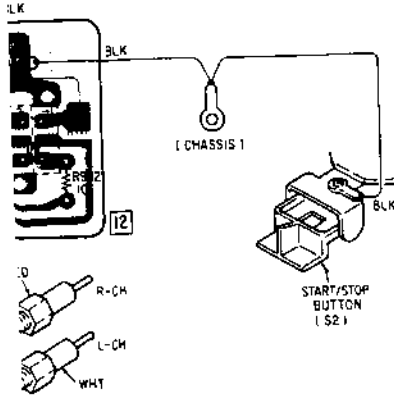
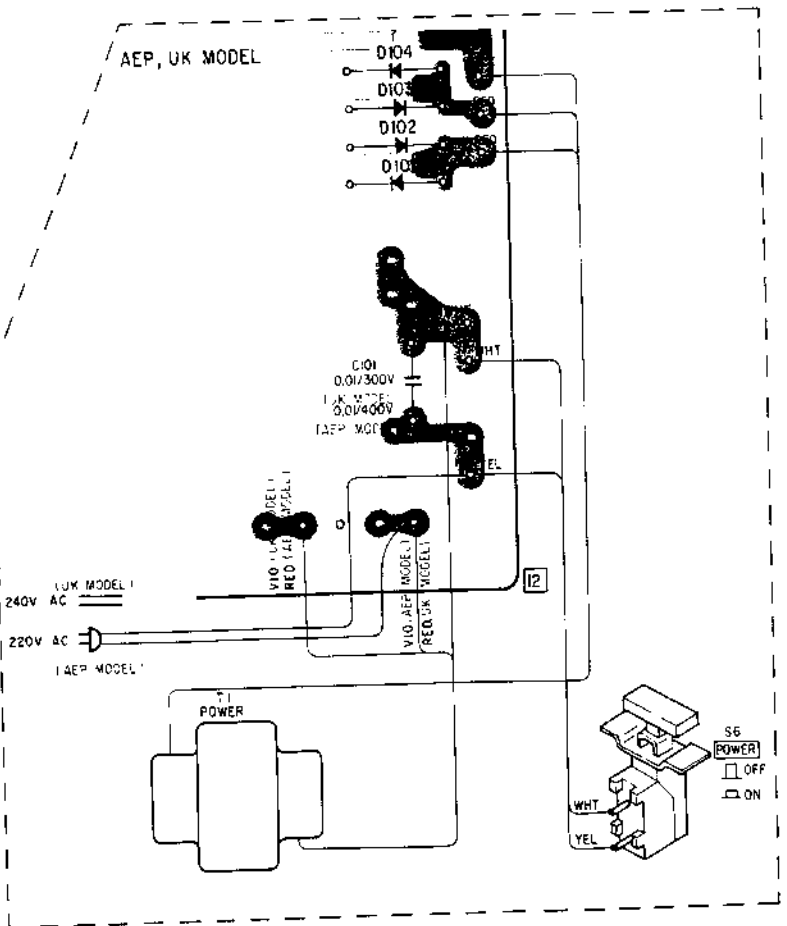
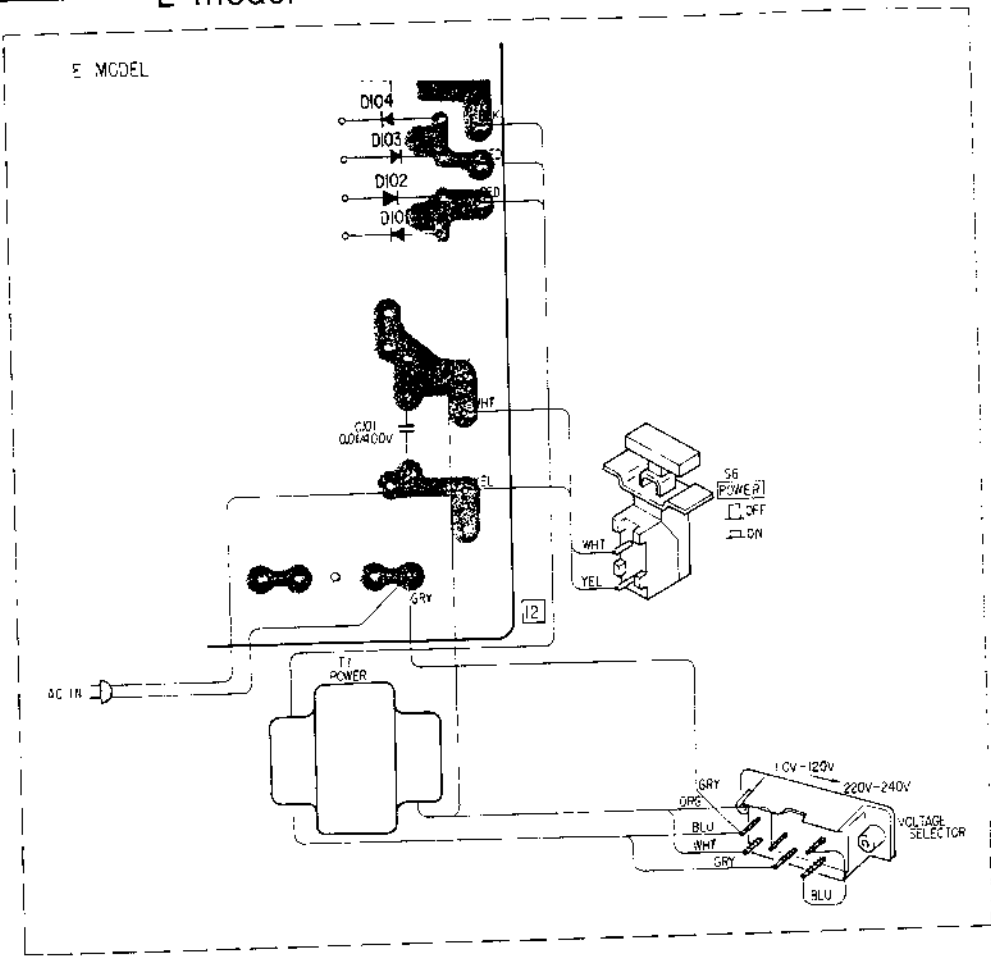
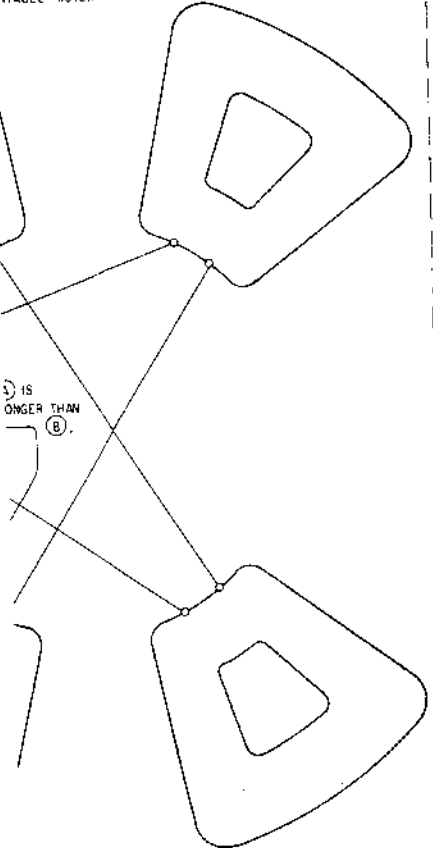
US model (Serial No. 801,001 and later)  
 AEP model (Serial No. 501,101 and later)  
 UK model (Serial No. 601,001 and later)  
 Canadian model  
 E model

**PS-X55**

C  
D

MOTOR COIL  
 (MOUNTABLE MOTOR)

IS  
 LONGER THAN  
 (B)



1

2

3

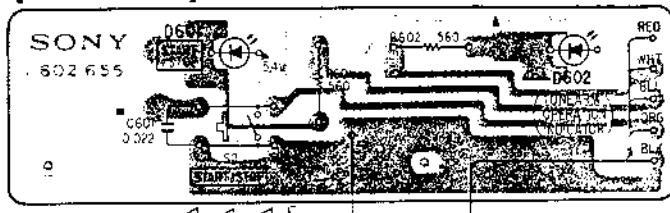
4

5

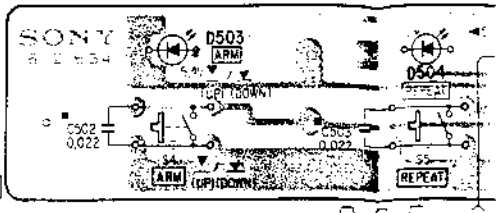
4-3. MOUNTING DIAGRAM - Conductor Side -  
See page 25 for the replacement semiconductors.

	A	B	C	D
Q		IC403 415 414	IC402	201 405 408 407 406 409 202
IC		IC401	402 702 701	411 410 412 413
D	404 601	401 801	602	503 201 504
	403			405

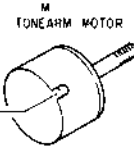
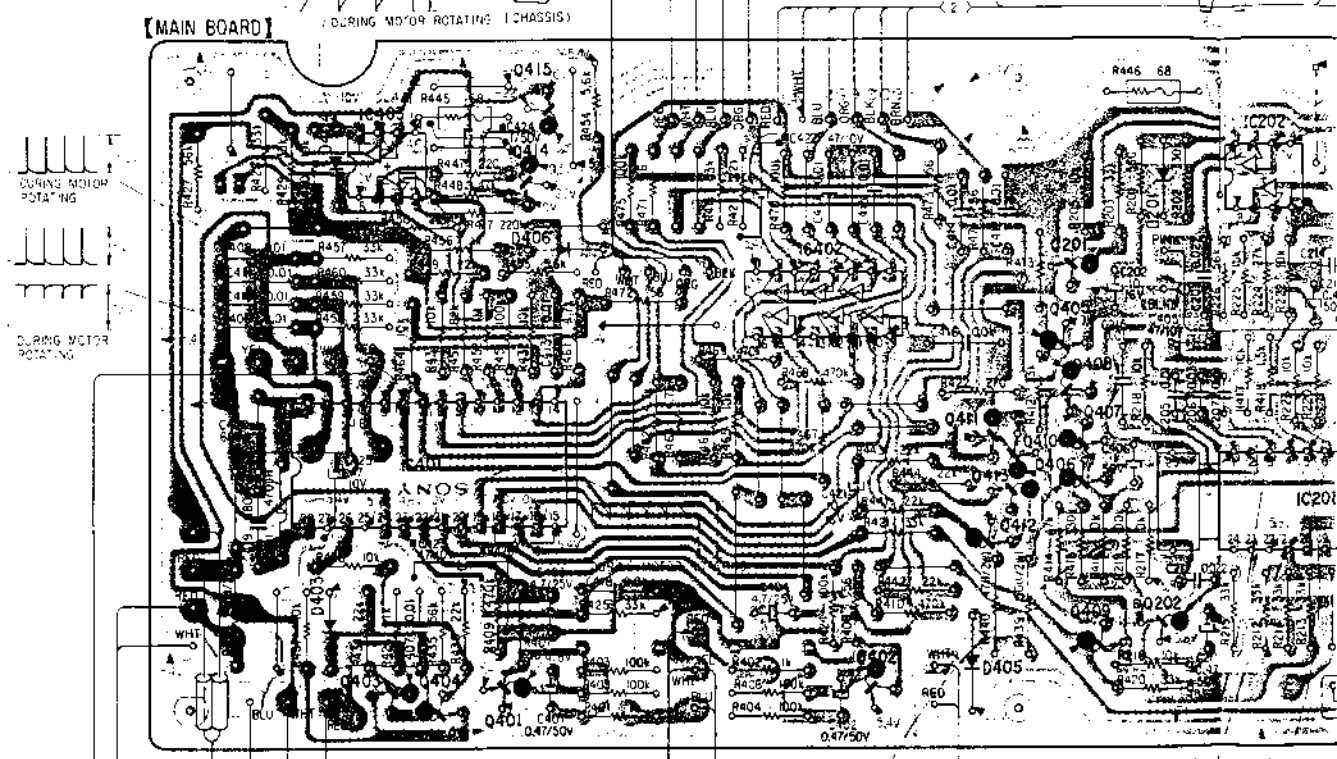
【SWITCH (B) BOARD】



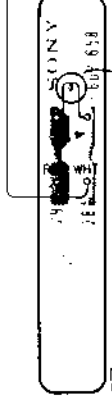
【SWITCH (A) BOARD】



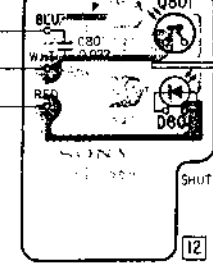
【MAIN BOARD】



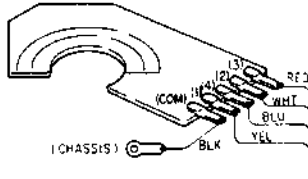
【LAMP BOARD】



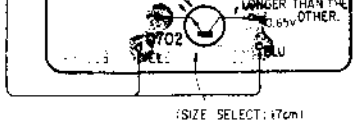
【INTERRUPTER BOARD】



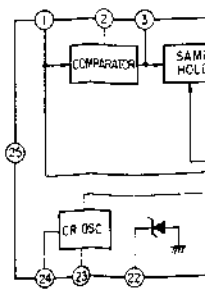
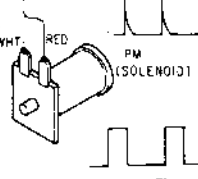
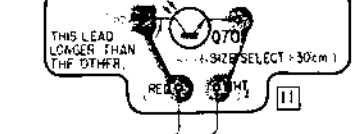
S1 CAM SWITCH



【SIZE SELECT (A) BOARD】



【SIZE SELECT (B) BOARD】



US model (Serial No. up to 801,000)  
 AEP model (Serial No. up to 501,100)  
 UK model (Serial No. up to 601,000)

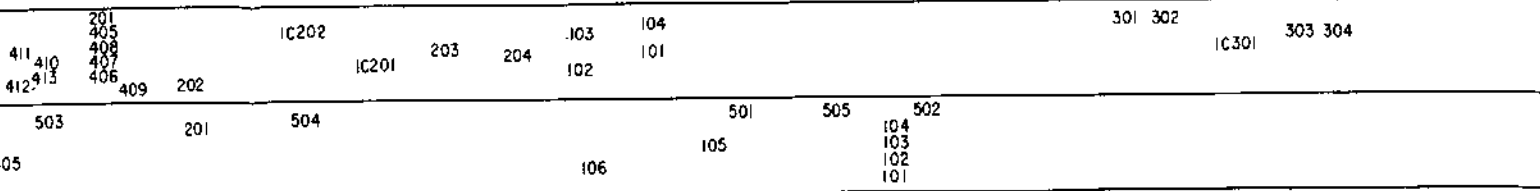
P

D

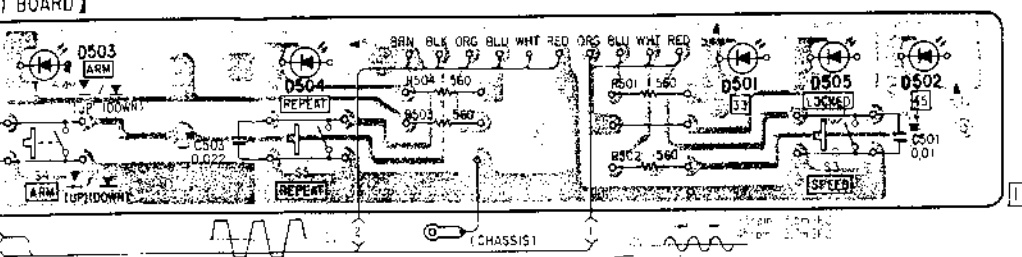
E

F

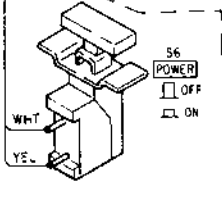
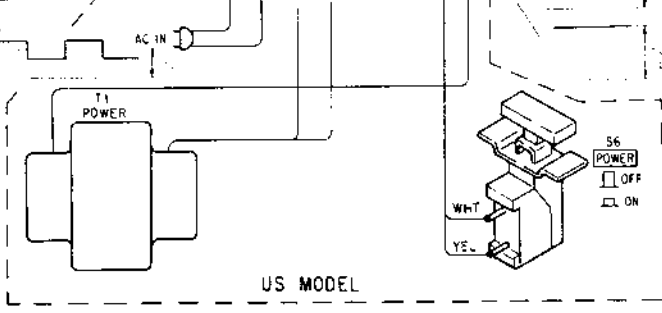
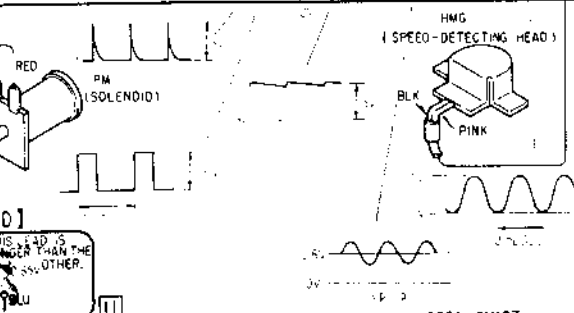
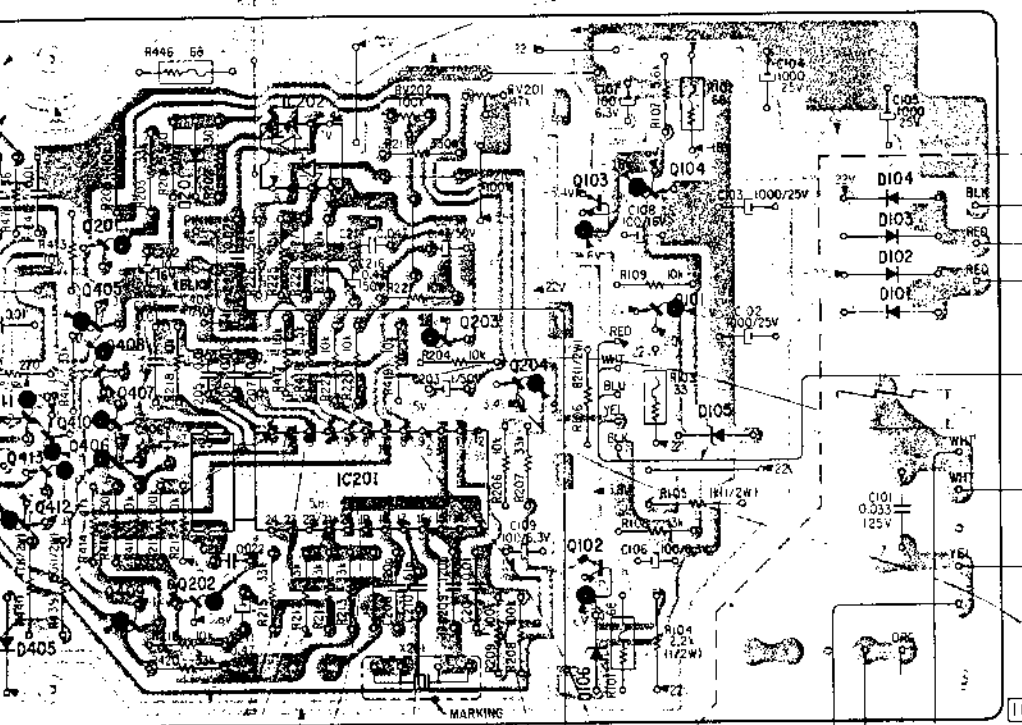
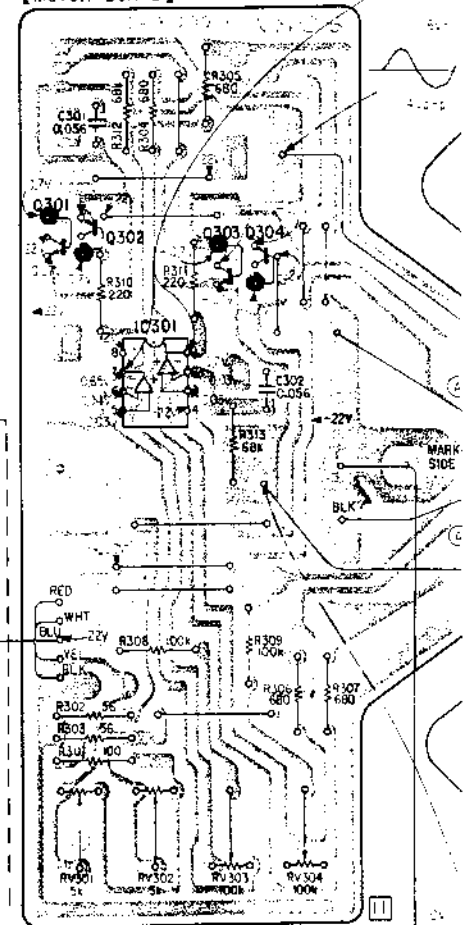
G



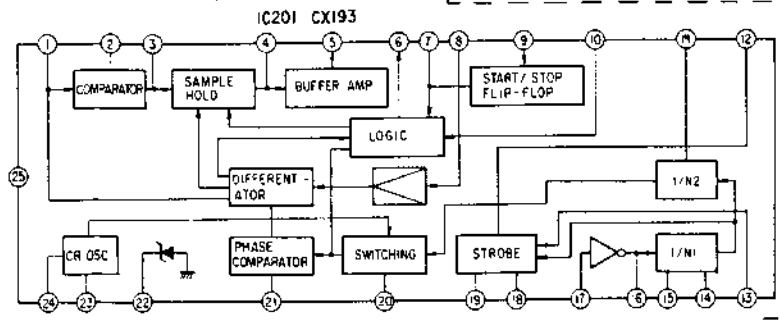
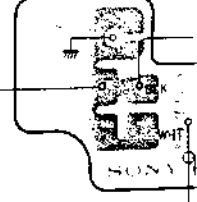
BOARD I



(MOTOR BOARD)



(PHONO BOARD)



LEAD W-RE (GROUND)

,000)  
,100)  
,000)

# PS-X55 PS-X55

US model (Serial No. )  
AEP model (Serial No. )  
UK model (Serial No. )

G

H

I

J

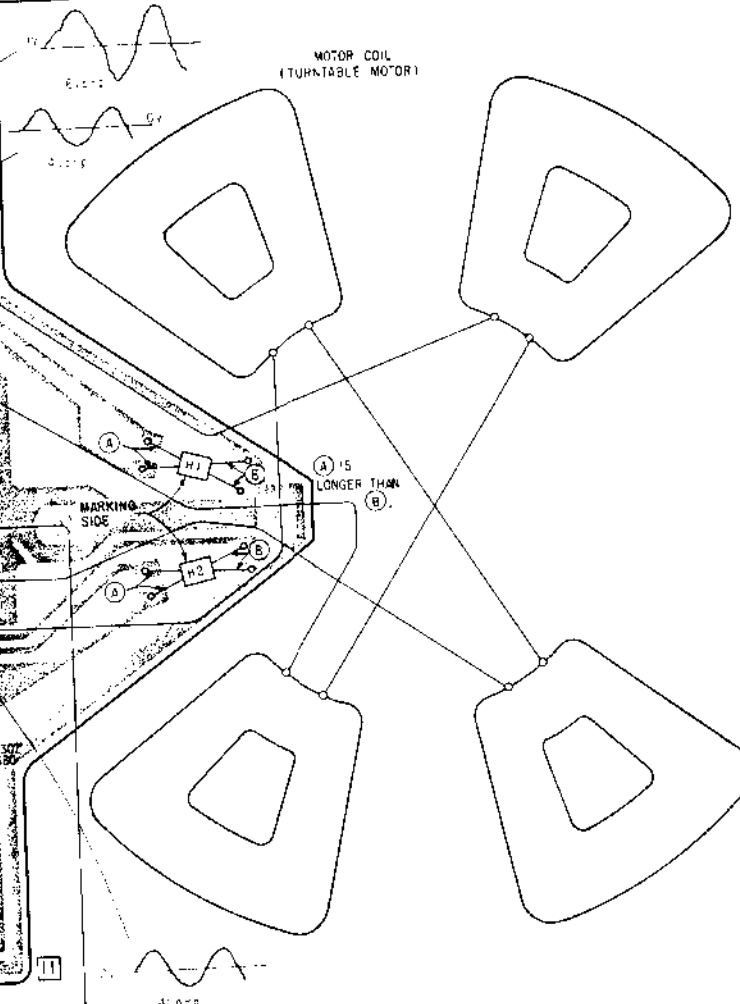
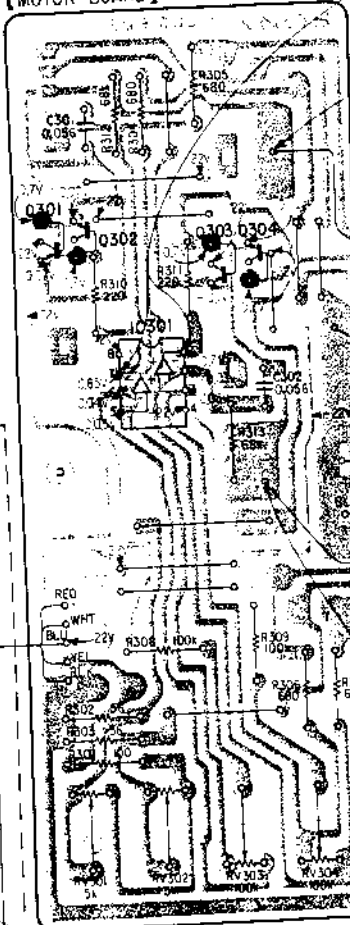
301 302  
IC 301 303 304

Q  
IC

D

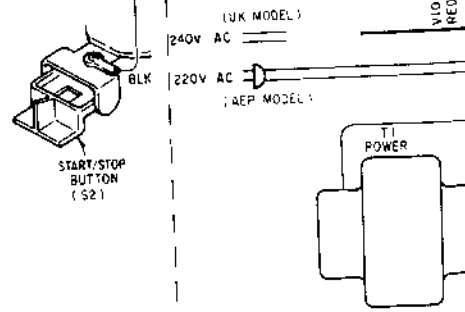
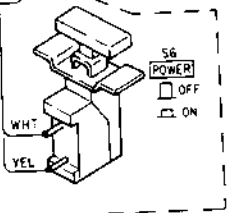
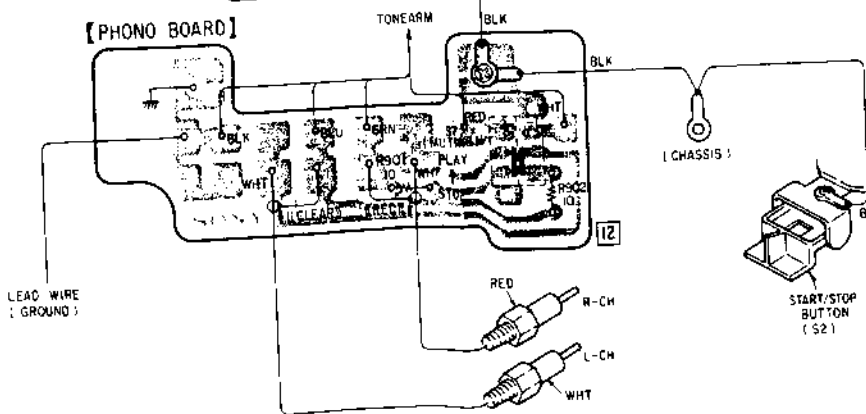
## [MOTOR BOARD]

MOTOR COIL  
(TURNTABLE MOTOR)



AEP, UK MODEL

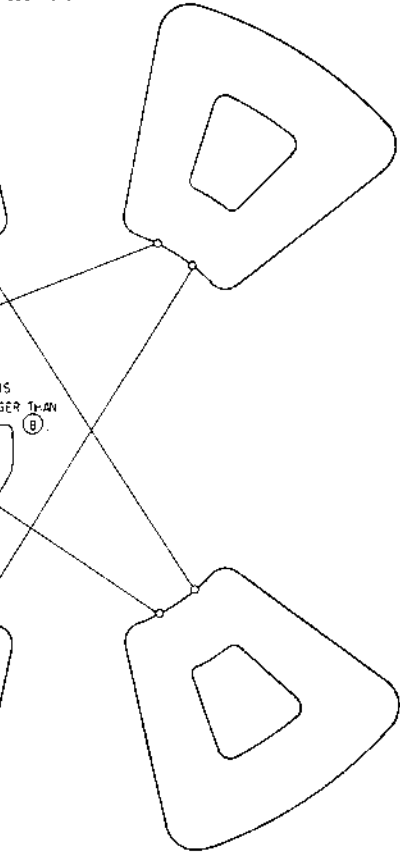
## [PHONO BOARD]



US model (Serial No. up to 801,000)  
 AEP model (Serial No. up to 501,100)  
 UK model (Serial No. up to 601,000)

I J K L

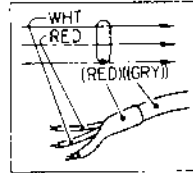
MOTOR COIL  
 VARIABLE MOTOR:



RESISTOR  
 1/2-W  
 (B)

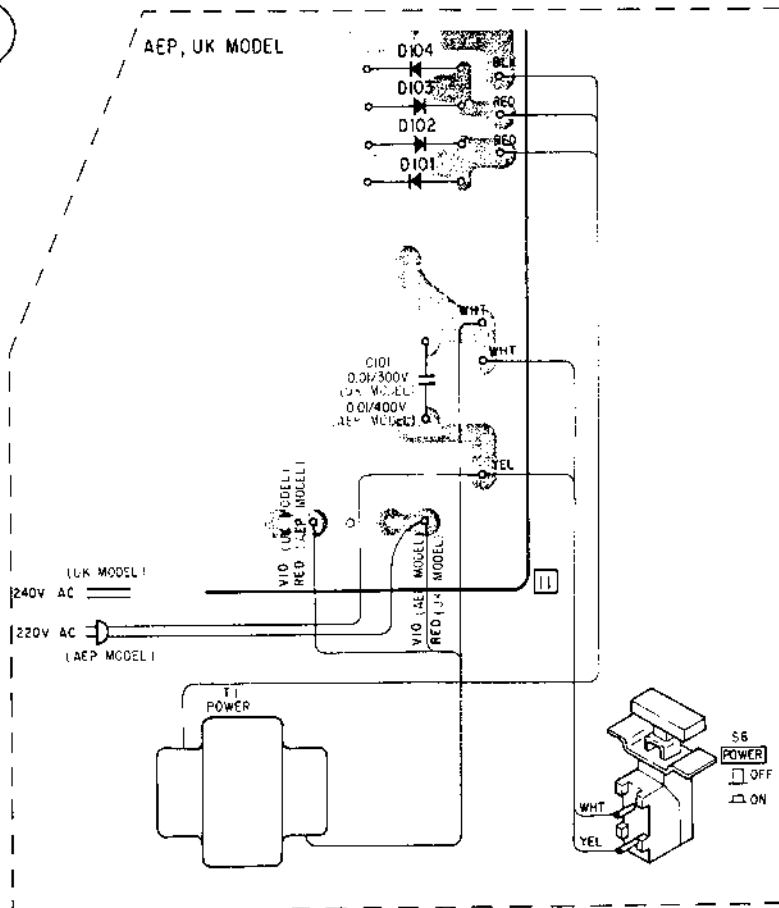
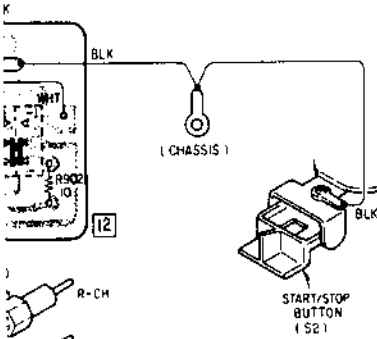
Note:

- Color code of sleeving over the end of the jacket.



- B+ pattern

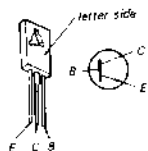
1  
2  
3  
4  
5



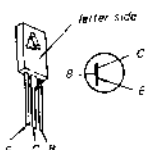
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

2SD414

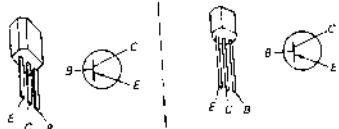


2SB548



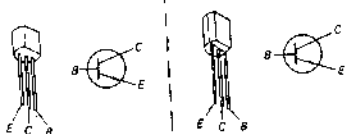
2SA1027R

(2SA733)

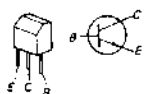


2SC1364

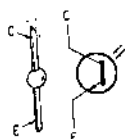
(2SC945)



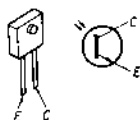
2SC1475 (2SD774)



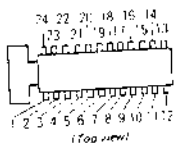
PH101



PH103

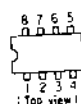


CX193

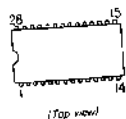


μPC4557C

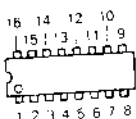
μPC4558C



μPD554C035



μPD4049C (MB84049B)



10E2

1S1555 (1T40)



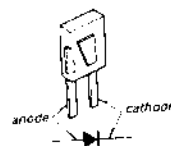
EQB01-12Z (EQA01-12)

EQB01-06 (EQA01-06)

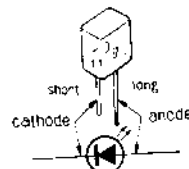


SEL1320G

SEL1120R



SR110



5GF-MS-07F





SECTION 5  
EXPLODED VIEWS

A

B

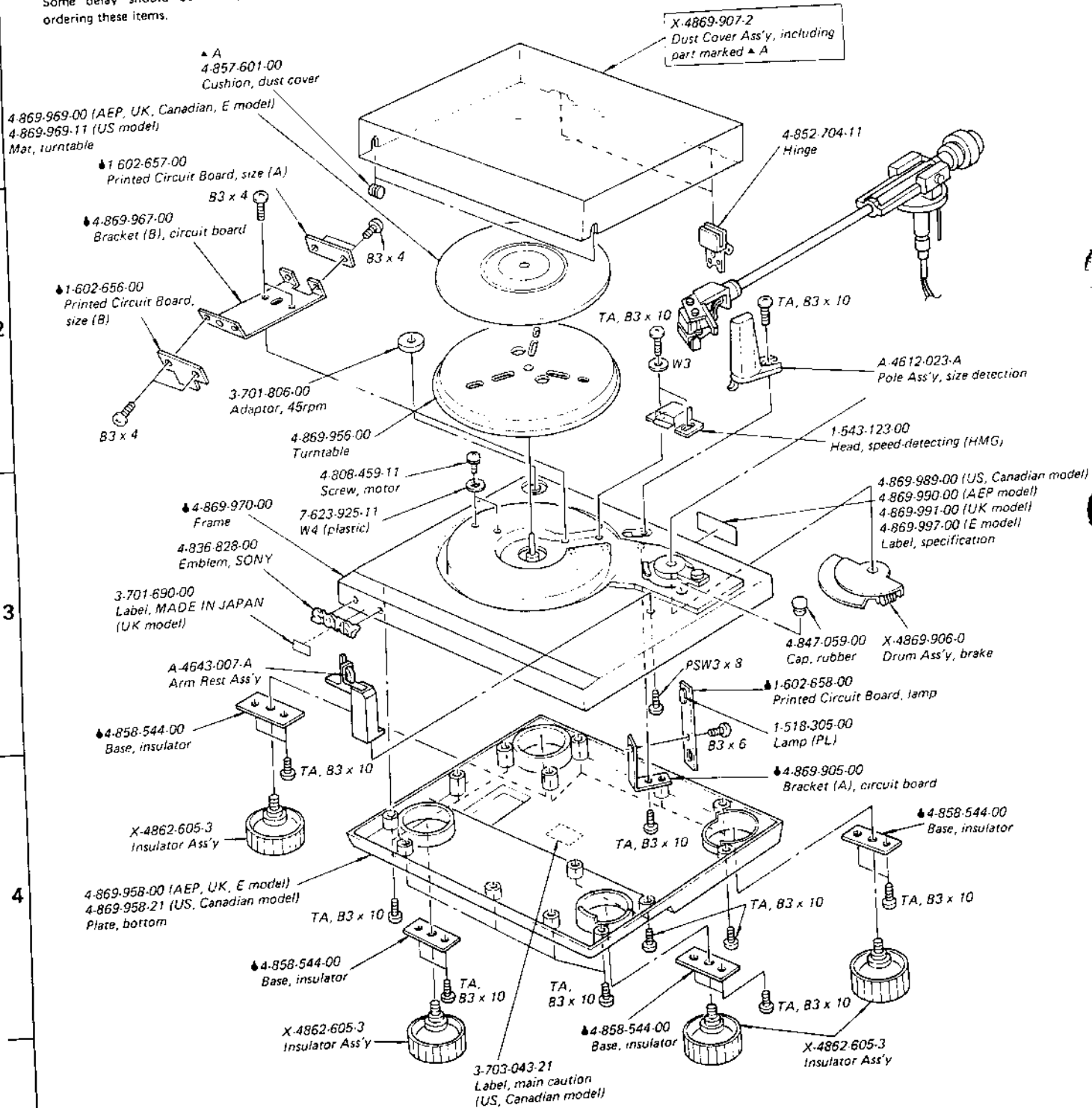
C

D

(1)

Note:

- Items marked "X" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head



(2)

1

2

3

4

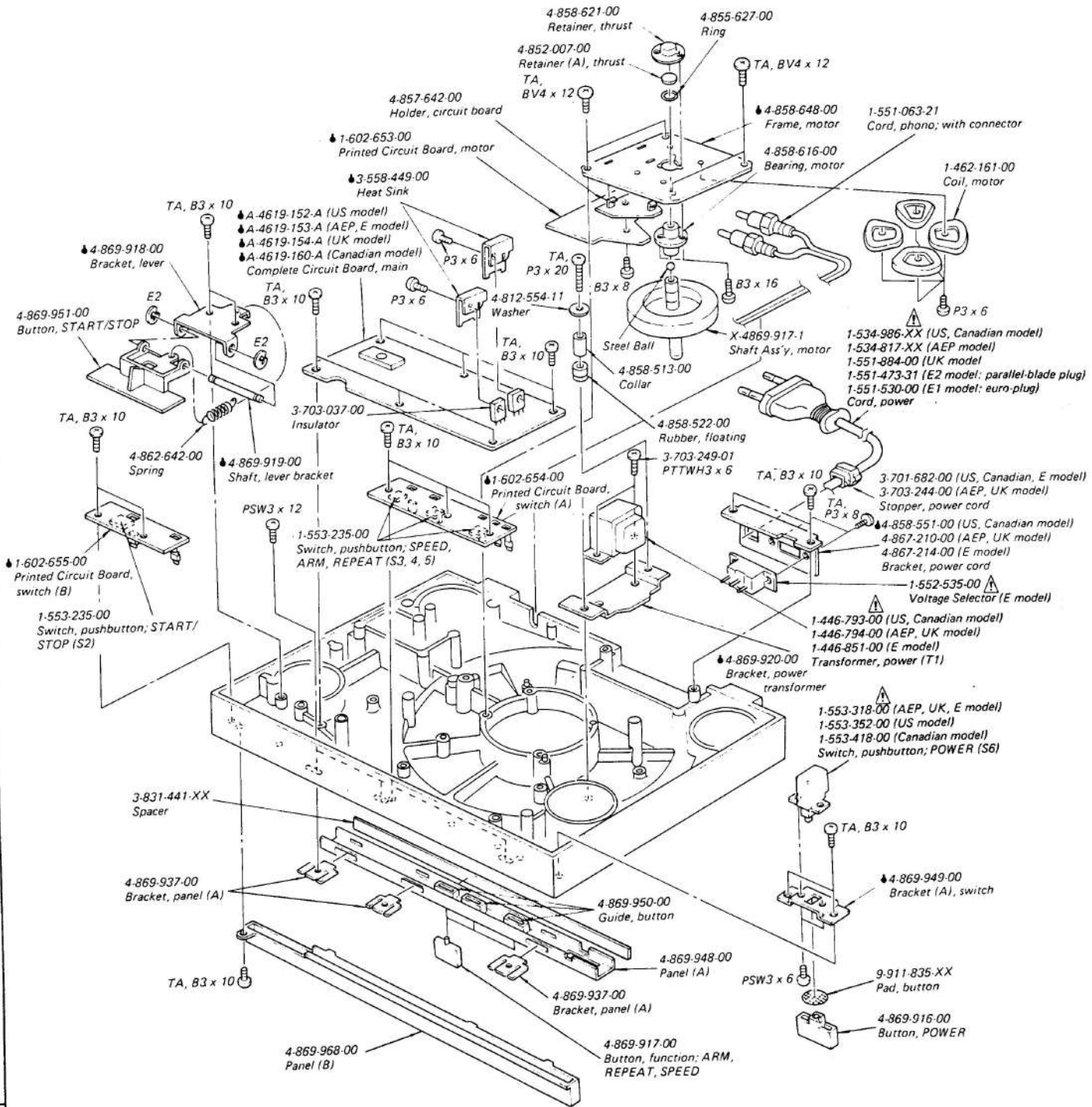
5

A

B

C

D



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

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

(3)

A B C D

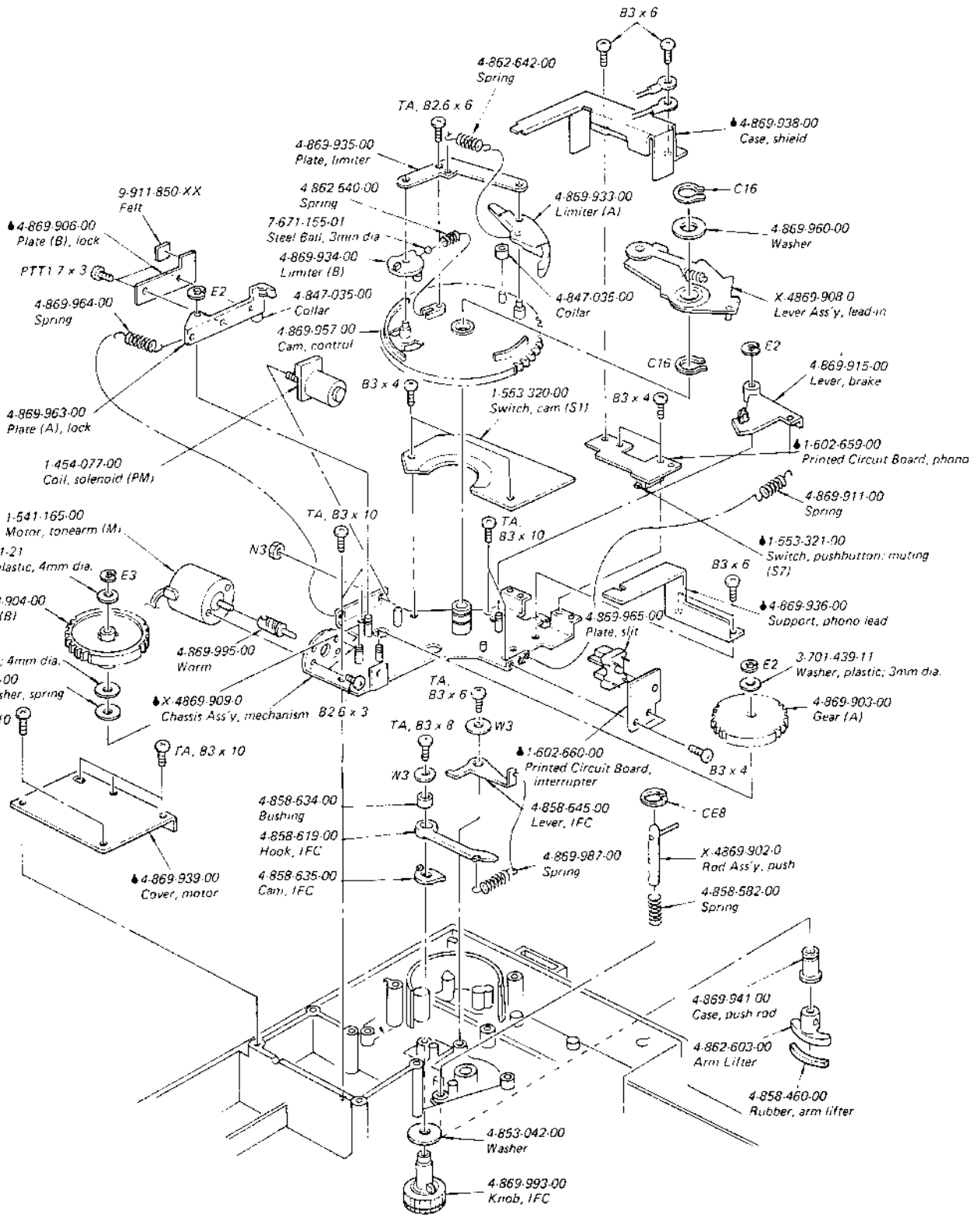
1

2

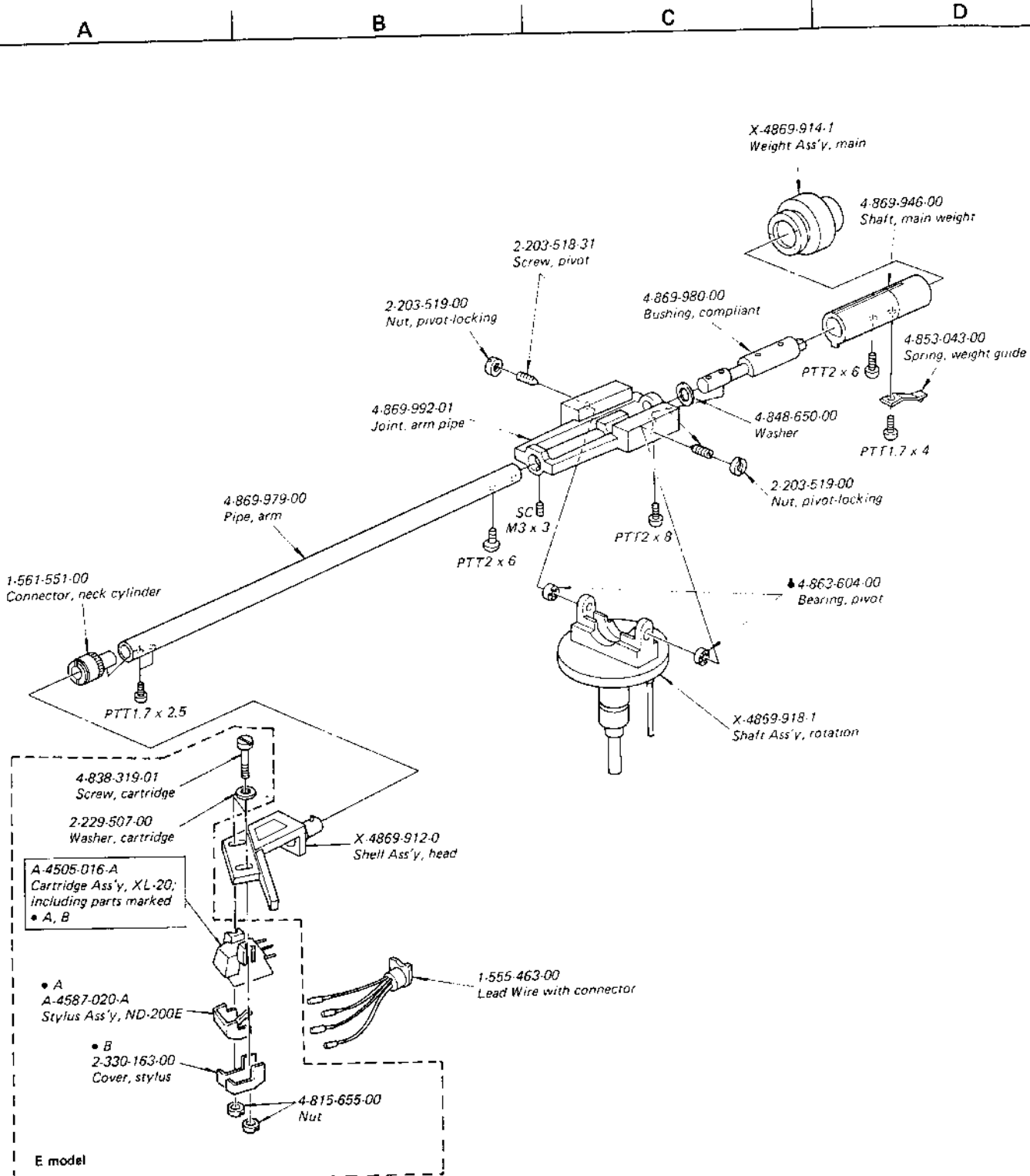
3

4

5



(4)



## SECTION 6 ELECTRICAL PARTS LIST

Ref. No.    Part No.    Description

### SEMICONDUCTORS

#### Transistors

Q101, 102	8-729-141-43	2SD414
Q103	8-729-154-83	2SB548
⇒ Q104	8-729-612-77	2SA1027R
⇒ Q201-203	8-729-663-47	2SC1364
⇒ Q204	8-729-612-77	2SA1027R
Q301	8-729-141-43	2SD414
Q302	8-729-154-83	2SB548
Q303	8-729-141-43	2SD414
Q304	8-729-154-83	2SB548
⇒ Q401, 402	8-729-612-77	2SA1027R
⇒ Q403-410	8-729-663-47	2SC1364
⇒ Q411	8-760-413-10	2SC1475
⇒ Q412	8-729-663-47	2SC1364
⇒ Q413	8-729-413-10	2SC1475
Q414	8-729-141-43	2SD414
Q415	8-729-154-83	2SB548
Q701, 702	8-729-101-01	PH101
Q801	8-729-101-13	PH103

#### ICs

IC201	8-751-930-00	CX193
IC202	8-759-145-57	μPC4557C
IC301	8-759-145-58	μPC4558C
IC401	8-759-154-35	μPD554C035
⇒ IC402	8-759-140-49	μPD4049C
IC403	8-759-145-58	μPC4558C

#### Diodes

D101-104	8-719-200-02	10E2
⇒ D105	8-719-930-12	EQB01-12Z
⇒ D106	8-719-931-06	EQB01-06
⇒ D201	8-719-931-06	EQB01-06
⇒ D403, 404	8-719-815-55	1S1555
D405	8-719-200-02	10E2
⇒ D406	8-719-815-55	1S1555
D501-504	8-719-311-20	SEL1120R

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

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

Ref. No.    Part No.    Description

D505	8-719-313-20	SEL1320G
D601, 602	8-719-311-20	SEL1120R
D801	8-719-101-11	SR110
H1, H2	8-719-905-07	5GF-MS-07F

### CAPACITORS

Common capacitors are omitted. Refer to the lists on pages 32 and 33 for their part numbers.

C101	{	1-161-744-00	0.01μF	400V	ceramic (AEP, E model)
		1-130-230-00	0.01μF	300V	film (UK model)
		1-130-233-00	0.033μF	125V	film (US model)
		1-130-098-00	0.022μF	125V	film (Canadian model)
C102-105	1-123-498-00	1000μF	25V	electrolytic	
C210	1-102-491-00	51pF	50V	ceramic	

### RESISTORS

All resistors are in ohms. Common 1/4W carbon resistors are omitted. Refer to the list on page 34 for their part numbers.

R101, 102	1-217-397-00	68	1/4W	fusible
R103	1-217-393-00	33	1/4W	fusible
R104	1-244-881-00	2.2k	1/4W	carbon
R105	1-244-873-00	1k	1/4W	carbon
R106	1-213-130-00	82	1/4W	carbon
R433	1-244-825-00	10	1/2W	carbon
R439	1-244-853-00	150	1/2W	carbon
R440	1-244-841-00	47	1/2W	carbon
R445, 446	1-217-397-00	68	1/4W	fusible

RV201	{	1-226-433-00	50k-B, adjustable; 33rpm
		(US model: serial No. up to 801,000) (AEP model: serial No. up to 501,100) (UK model: serial No. up to 601,000)	
RV201	{	1-226-759-00	50k-B, adjustable; 33rpm
		(US model: serial No. 801,001 and later) (AEP model: serial No. 501,101 and later) (UK model: serial No. 601,001 and later) (Canadian, E model)	

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

• Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
RV202	1-226-434-00	100k-B, adjustable; 45rpm (US model: serial No. up to 801,000) (AEP model: serial No. up to 501,100) (UK model: serial No. up to 601,000)
	1-226-938-00	100k-B, adjustable; 45rpm (US model: serial No. 801,001 and later) (AEP model: serial No. 501,101 and later) (UK model: serial No. 601,001 and later) Canadian, E model
RV301, 302	1-226-235-00	5k-B, adjustable; gain
RV303, 304	1-226-239-00	100k-B, adjustable; offset

**MISCELLANEOUS**

HMG	1-543-123-00	Head, speed-detecting
L401	1-408-096-00	Coil, 470μH; microinductor
M	1-541-165-00	Motor, tonearm
PL	1-518-305-00	Lamp
PM	1-454-077-00	Coil, solenoid
S1	1-553-320-00	Switch, cam
S2	1-553-235-00	Switch, pushbutton; START/STOP
S3	1-553-235-00	Switch, pushbutton; SPEED
S4	1-553-235-00	Switch, pushbutton; ARM
S5	1-553-235-00	Switch, pushbutton; REPEAT
S6	▲1-553-318-00	Switch, pushbutton; POWER (AEP, UK, E model)
	▲1-553-352-00	Switch, pushbutton; POWER (US model)
	▲1-553-418-00	Switch, pushbutton; POWER (Canadian model)
S7	1-553-321-00	Switch, pushbutton; muting
T1	▲1-446-793-00	Transformer, power (US, Canadian model)
	▲1-446-794-00	Transformer, power (AEP, UK model)
	▲1-446-851-00	Transformer, power (E model)
X201	1-527-380-00	Crystal, OSC
	1-462-161-00	Coil, motor
	▲1-534-817-XX	Cord, power (AEP model)
	▲1-534-986-XX	Cord, power (US, Canadian model)
	1-551-063-21	Cord, phono; with connector
	▲1-551-473-31	Cord, power; parallel-blade plug (E2 model)
	▲1-551-530-00	Cord, power; euro-plug (E1 model)
	▲1-551-884-00	Cord, power (UK model)
	▲1-552-535-00	Voltage Selector (E model)
	1-555-463-00	Lead Wire with connector
	1-561-551-XX	Connector, neck cylinder

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

Ref. No.    Part No.    Description

**COMPLETE CIRCUIT BOARDS**

- ▲ A-4619-152-A    Main (US model)
- ▲ A-4619-153-A    Main (AEP, E model)
- ▲ A-4619-154-A    Main (UK model)
- ▲ A-4619-160-A    Main (Canadian model)

**PRINTED CIRCUIT BOARDS**

- ▲1-602-653-00    Motor
- ▲1-602-654-00    Switch (A)
- ▲1-602-655-00    Switch (B)
- ▲1-602-656-00    Size (B)
- ▲1-602-657-00    Size (A)
- ▲1-602-658-00    Lamp
- ▲1-602-659-00    Phono
- ▲1-602-660-00    Interrupter

**ACCESSORIES AND PACKING MATERIALS**

<u>Part No.</u>	<u>Description</u>
X-4869-912-0	Shell Ass'y, head
X-4869-915-0	Screw Ass'y, cartridge
3-701-634-00	Bag, plastic; for turntable
3-701-630-00	Bag, plastic; for instruction manual
3-701-616-00	Bag, plastic; for head shell
3-701-806-00	Adaptor, 45rpm
3-783-188-11	Manual, instruction (AEP, UK, E model)
3-783-188-21	Manual, instruction (US model)
3-783-188-21	Manual, instruction (Canadian model)
3-794-902-31	Manual, instruction (Canadian model)
4-847-314-00	Bag, protection; for set
4-848-002-00	Cushion, arm pipe
4-862-043-00	Cushion, tonearm
4-862-680-00	Protector
4-869-959-00	Plate, light interception
4-869-962-00	Adjuster, drop-point
4-869-974-00	Carton, for accessories
4-869-975-00	Cushion, right
4-869-976-00	Cushion, left
4-869-977-00	Case, accessories
4-869-981-00	Sub-weight
4-869-996-00	Carton
4-870-529-00	Case, head shell (US, AEP, UK model)

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

**ELECTROLYTIC CAPACITORS**

CAP. (μF)	RATING → : Use the high voltage rated one.					
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47						1-121-726-00
1.0						1-121-391-00
2.2						1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	-	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-388-00	-
3300	1-121-661-00	1-123-075-00	1-123-071-00	-	-	-

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	-	-	-	-
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	-	1-123-028-00
3.3	1-121-995-00	-	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	-	-
47	1-123-251-00	1-121-919-00	-	-
100	1-123-084-00	-	-	-

**CERAMIC CAPACITORS**

RATING							
CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

**CERAMIC (SEMICONDUCTOR) CAPACITORS**

RATING → : Use the high voltage rated one.					
CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

CAP. (μF)	RATING																		
	50 VOLT.			100 VOLT.			200 VOLT.			CAP. (μF)	50 VOLT.			100 VOLT.			200 VOLT.		
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.	PART No.	PART No.	PART No.			
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-339-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00	0.012	1-108-363-00	1-108-390-00	1-108-434-00				
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00				
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-364-00	1-108-392-00	1-108-436-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00				
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-254-00	1-108-393-00	1-108-437-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00				
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-251-00	1-108-389-00	1-108-433-00	0.27	1-108-854-00	-	-				
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	-	-	0.33	1-108-855-00	-	-				
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	-	-	0.39	1-108-856-00	-	-				
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	-	-	0.47	1-108-857-00	-	-				
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	-	-	-	-	-	-				
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00	-	-	-	-	-	-	-	-				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00	-	-	-	-	-	-	-	-				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00	-	-	-	-	-	-	-	-				

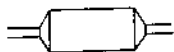
TANTALUM CAPACITORS



→ Use the high voltage rated one.

CAP. (μF)	RATING												
	3.15 VOLT.		6.3 VOLT.		10 VOLT.		20 VOLT.			25 VOLT.		35 VOLT.	
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	
0.01												1-131-396-00	
0.015												1-131-397-00	
0.022												1-131-398-00	
0.033												1-131-399-00	
0.047												1-131-400-00	
0.068												1-131-401-00	
0.1												1-131-402-00	
0.15												1-131-403-00	
0.22												1-131-404-00	
0.33										1-131-409-00		1-131-405-00	
0.47								1-131-412-00				1-131-406-00	
0.68					1-131-415-00			1-131-410-00				1-131-407-00	
1.0								1-131-413-00				1-131-408-00	
1.5				1-131-418-00				1-131-411-00				1-131-348-00	
2.2	1-131-424-00			1-131-414-00				1-131-414-00		1-131-355-00		1-131-349-00	
3.3		1-131-422-00								1-131-356-00		1-131-350-00	
4.7	1-131-425-00			1-131-420-00	1-131-417-00			1-131-362-00		1-131-357-00		1-131-351-00	
6.8			1-131-423-00	1-131-376-00	1-131-369-00			1-131-363-00		1-131-358-00		1-131-352-00	
10	1-131-426-00		1-131-383-00	1-131-377-00	1-131-370-00			1-131-364-00		1-131-359-00		1-131-353-00	
15	1-131-390-00		1-131-384-00	1-131-378-00	1-131-371-00			1-131-365-00		1-131-359-00		-	
22	1-131-391-00		1-131-385-00	1-131-379-00	1-131-372-00			1-131-366-00		1-131-360-00		-	
33	1-131-392-00		1-131-386-00	1-131-373-00	1-131-373-00			1-131-367-00		-		-	
47	1-131-393-00		1-131-387-00	1-131-380-00	1-131-374-00			-		-		-	
68	1-131-394-00		1-131-388-00	1-131-381-00	-			-		-		-	
100	1-131-395-00		-	-	-			-		-		-	

TANTALUM CAPACITORS



CAP. (μF)	RATING											
	3 VOLT.		6.3 VOLT.		10 VOLT.		16 VOLT.		20 VOLT.		35 VOLT.	
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	
0.033												1-131-273-00
0.047												1-131-274-00
0.068												1-131-275-00
0.1												1-131-276-00
0.15												1-131-277-00
0.22										1-131-265-00		1-131-278-00
0.33										1-131-263-00		1-131-279-00
0.47						1-131-169-00				1-131-264-00		1-131-280-00
0.68						1-131-254-00			1-131-258-00	1-131-265-00		1-131-281-00
1.0										1-131-266-00		1-131-282-00
1.5										1-131-267-00		1-131-283-00
2.2										1-131-268-00		1-131-284-00
3.3										1-131-269-00		-
4.7										1-131-270-00		-
6.8										1-131-271-00		-
10										1-131-272-00		-
15										1-131-261-00		-
22										-		-
33										-		-
47	1-131-176-00									-		-
100	1-131-288-00									-		-

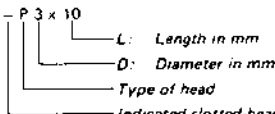


1/4 WATT CARBON RESISTORS

$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	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	1.0M	1-246-545-00
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	1.1M	1-210-814-00
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	1.2M	1-210-815-00
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	1.3M	1-210-816-00
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	1.5M	1-210-817-00
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	1.6M	1-210-818-00
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	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
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	4.7M	1-244-761-00
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	5.1M	1-244-762-00
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		

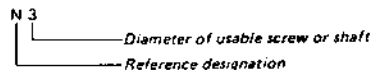
HARDWARE NOMENCLATURE

Screw:



Unless otherwise indicated, it means cross-recessed head (Philips type).

Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
<b>SCREWS</b>			
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 PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		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-fillister-head screw	
RF		fillister-head screw	
BV		brazer-head screw	

Reference Designation	Shape	Description	Remarks
<b>SELF-TAPPING SCREWS</b>			
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
<b>SET SCREWS</b>			
SC		set screw	
SC		hexagon-socket set screw	ex. SC 2.6 x 4, hexagon socket
<b>NUT</b>			
N		nut	
<b>WASHERS</b>			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex. LW3, internal
LW		external-tooth lock washer	ex. LW3, external
<b>RETAINING RINGS</b>			
E		retaining ring	
G		grip-type retaining ring	

Sony Corporation

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