PS-LX220

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model

SPECIFICATIONS

Turntable

Platter	30.0 cm (12 in.), aluminum-alloy diecast
Motor	DC servo motor
Drive system	Belt drive
Control system	DC servo control system
Speed	33 1/3 rpm, 45 rpm
Starting characteristics	Comes to nominal speed within 1/2 revolution (33 1/3 rpm)
Wow and flutter	0.045% (WRMS)
Signal-to-noise ratio	70 dB (DIN-B)
Automatic system	Return, reject

Tonearm

Type	Dynamically balanced
Pivot-to-stylus length	216.5 mm (8 1/2 in.)
Overhang	16.5 mm (21/32 in.)

Cartridge

Type	Moving magnet type
Frequency response	20 Hz to 20 kHz
Channel separation	16 dB at 1 kHz
Output voltage	2.5 mV at 1 kHz, 5 cm/sec.
Load impedance	50 to 100 kilohms
Tracking force	2 g
Stylus	Sony ND-142G (conical 0.6 mil diamond)
Weight	8 g

General

Power requirements	US, Canadian model:	120 V ac
	AEP model:	220 V ac
	UK model:	240 V ac
	E model:	110 - 120 or 220 - 240 V ac adjustable, 50/60 Hz
Power consumption	5 W	
Dimensions	Approx. 430 × 110 × 360 mm (w/h/d) (17 × 4 3/8 × 14 in.) including projecting parts and controls	
Weight	Approx. 3.5 kg (7 lbs 12 oz), net	
	Approx. 4.5 kg (9 lbs 10 oz), in shipping carton	

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES 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.

SAFETY-RELATED COMPONENT WARNING!!

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

MICROFILM

STEREO TURNTABLE SYSTEM

SONY®

AUD

SAFETY CHECK-OUT (US Model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

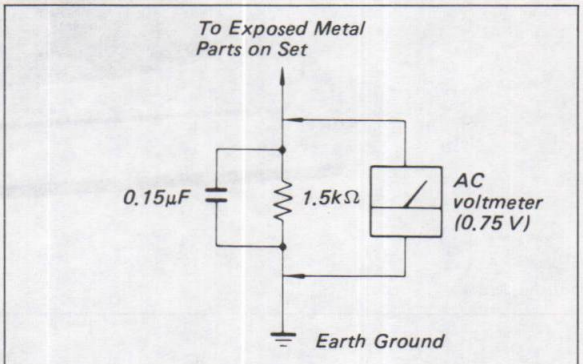
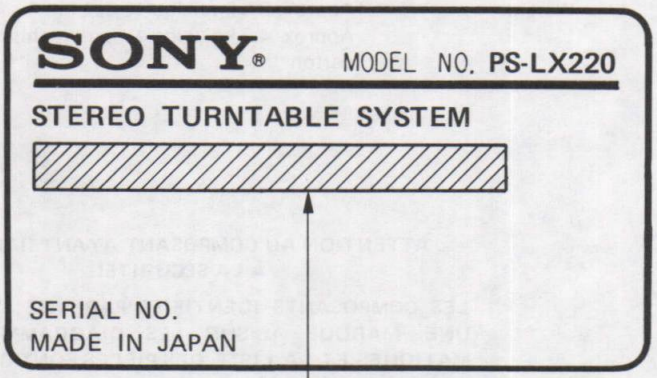


Fig. A. Using an AC voltmeter to check AC leakage.

MODEL IDENTIFICATION

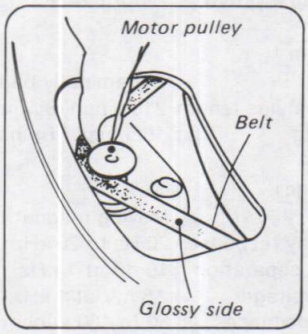
—Specification Label—



US, Canadian model:	AC: 120V — 60 Hz 5W
AEP model:	AC: 220V — 50/60 Hz 5W
UK model:	AC: 240V — 50/60 Hz 5W
E model:	AC: 110 ~ 120V, 220 ~ 240V — 50/60 Hz 5W

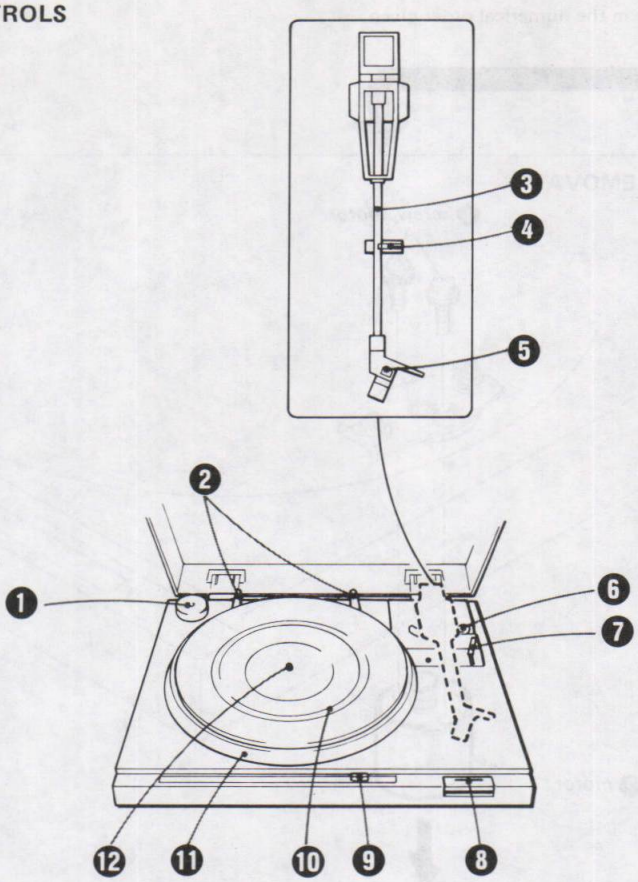
CAUTION ON INSTALLING BELT

When installing belt, glossy side should be faced outside.



SECTION 1
OUTLINE

FUNCTION OF CONTROLS



❶ 45-rpm adaptor

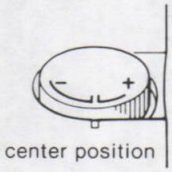
❷ Disc centering guides

❸ Tonearm

❹ Arm rest

❺ Cartridge

❻ ANTI-SKATING compensator
Normally, set it at the center position. If the stylus is driven inward when the tone arm is lowered to the lead-in groove, turn the ANTI-SKATING compensator to ⊕. If the stylus is driven outward, turn the ANTI-SKATING compensator to ⊖.



❼ ▼/▼ (cueing) lever
Used to lift or lower the tonearm.

❽ REJECT button
To stop during play, press this button.

❾ SPEED selector
Set the SPEED selector according to the speed of the record to be played. For 45-rpm records, depress the selector. For 33$^{1}/_{3}$-records, press it again.

❿ Rubber mat

⓫ Turntable platter

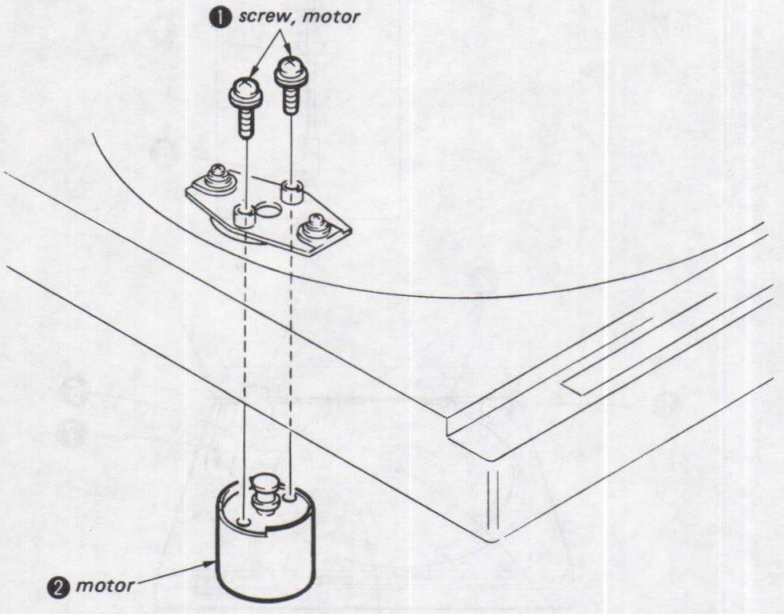
⓬ Center spindle

SECTION 2
DISASSEMBLY

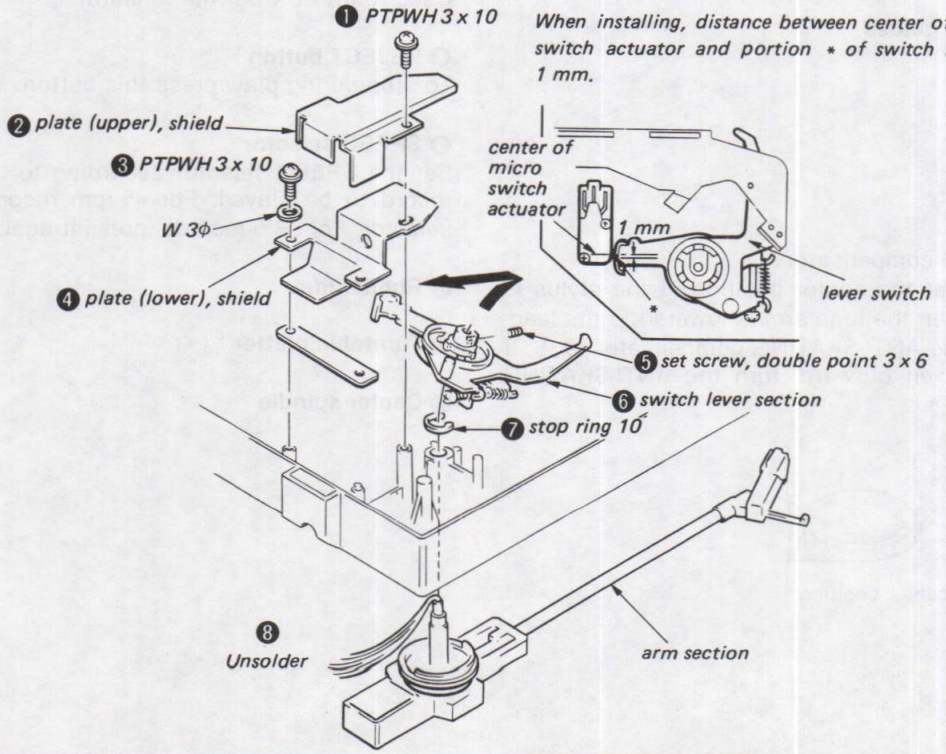
Note: Follow the disassembly procedure in the numerical order given.

REMOVE BOTTOM PLATE

MOTOR REMOVAL



ARM SECTION REMOVAL



LEAD WIRE INSTALLATION

1 Pass piano wire with lead wires through pipe as shown in Fig. A.

2 Pass piano wire with lead wires through center joint assy as shown in Fig. B.

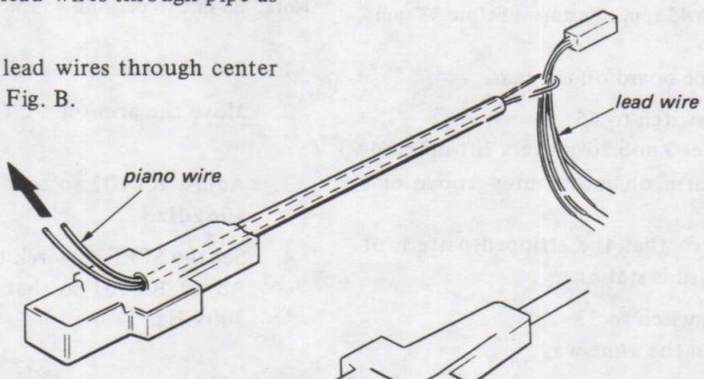


Fig. A.

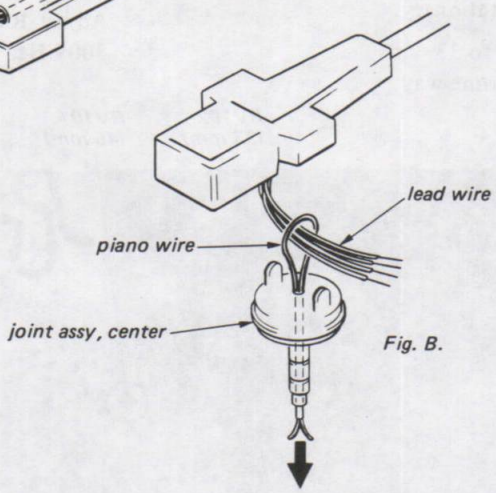
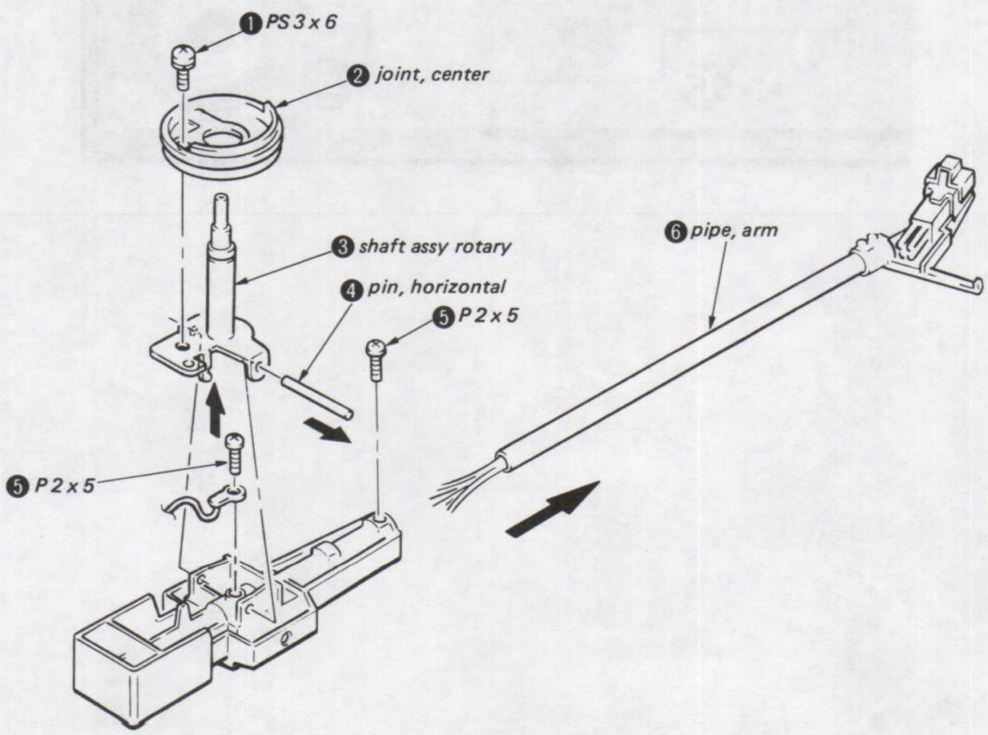


Fig. B.

ARM PIPE REMOVAL



SECTION 3
ADJUSTMENTS

Speed Adjustment (Using a stroboscope board)

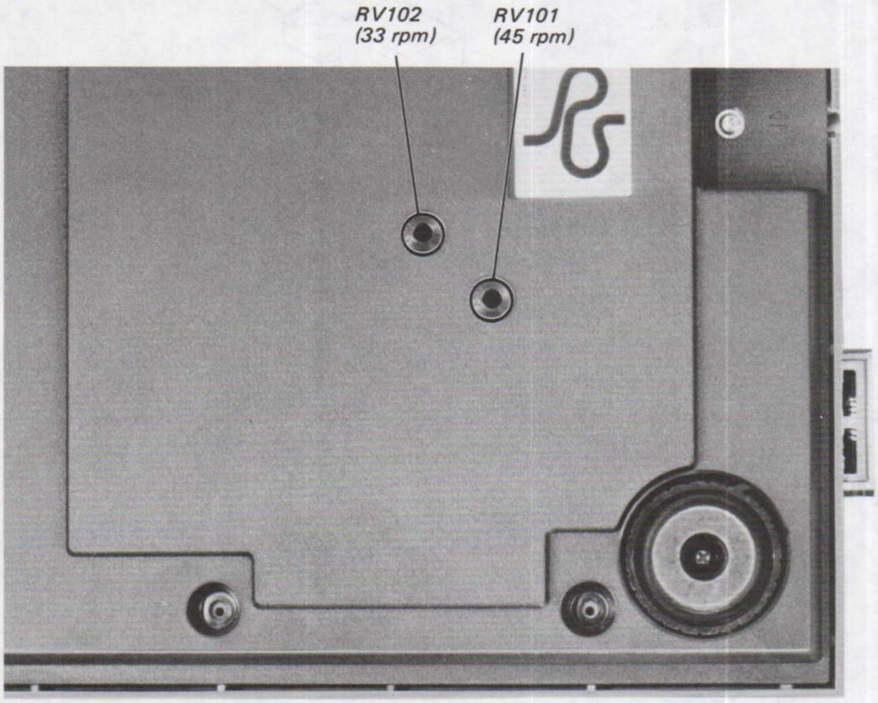
Note: Be sure to perform 45 rpm adjustment before 33 rpm.

1. Put a stroboscope board on the mat.
2. Set the SPEED switch to 45.
   Depress the lifter knob to make a lift-up mode and move the arm on most outer-groove of a record.
   Adjust RV102 so that the stripped pattern of stroboscope board is stationary.
3. Set the SPEED switch to 33.
   Adjust RV101 in the same way.

(Using a test record)

Note: Be sure to perform 45 rpm adjustment before 33 rpm.

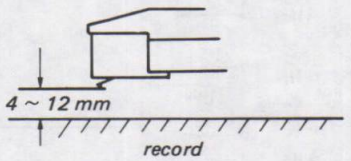
1. Put a test record (YFSC-16) on the mat.
2. Move the arm on a-2 (3 kHz) section and trace it.
3. Adjust RV102 so that the frequency is 4038 – 4062 Hz.
4. Set the SPEED switch to 33.
   Adjust RV101 so that the frequency is 2991 – 3009 Hz.

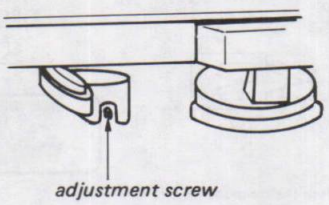


Stylus Height Adjustment

1. Put a test record (YFSC-16) or a record on the mat.
2. Depress the lifter knob to make a lifter-up mode and move the arm on most outer-groove of a record. Confirm that the stylus height from a record is within specification. If not, turn the adjustment screw.
3. Move the arm on most inner-groove of a record and confirm that the stylus height from a record is within specification. If not, turn the adjustment screw and repeat steps 2 and 3.

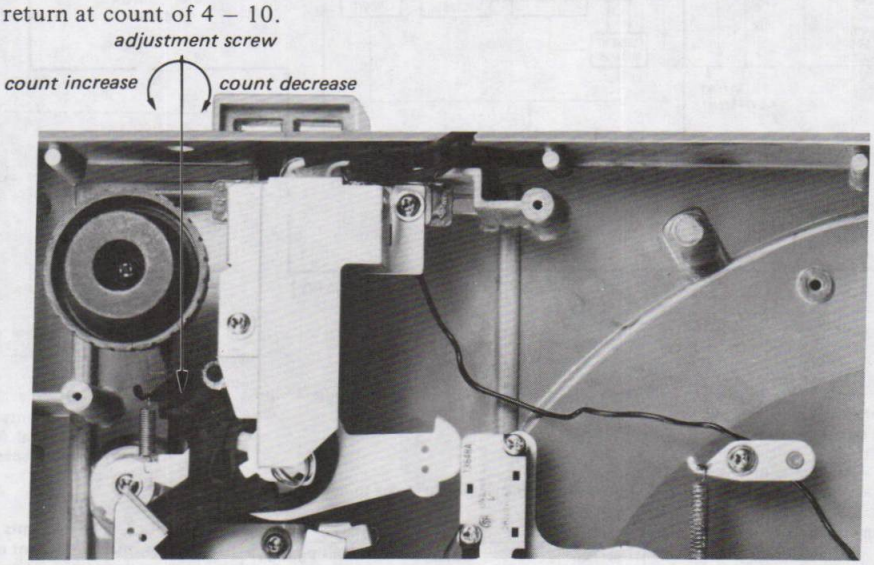
Specification: 4 ~ 12 mm



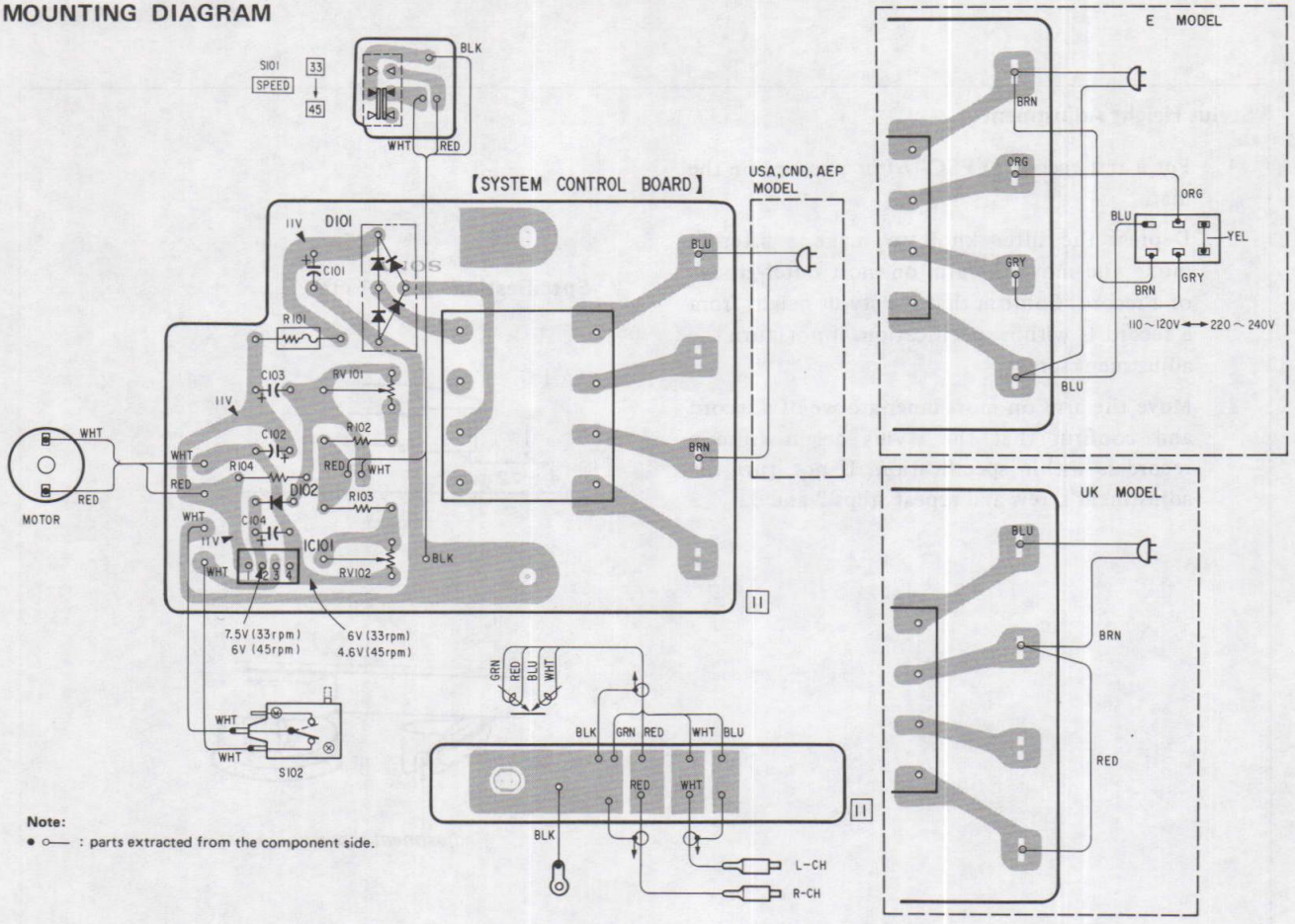


Automatic Return Position Adjustment

1. Put a test record (YFSC-16) on the mat.
2. Set the SPEED switch to 33 and move the tonearm on a return check groove.
3. Turn the adjustment screw so that the tonearm starts to return at count of 4 – 10.

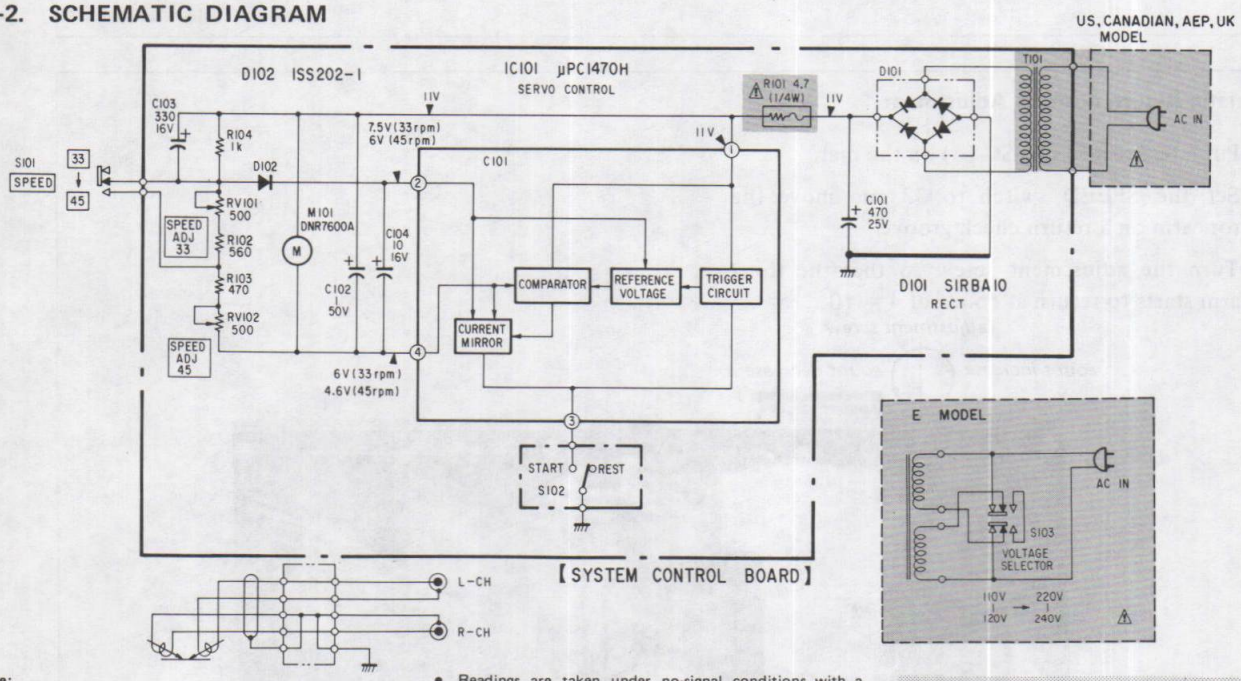


4-1. MOUNTING DIAGRAM



Note:
- ● ○— : parts extracted from the component side.

4-2. SCHEMATIC DIAGRAM



Note:
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- ⁓⁓⁓ : fusible resistor.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).
  ( ) :
  [ ] :
  < > :
- Voltage variations may be noted due to normal production tolerances.
- Switches:

Ref. No.	Switch	Position
S101	SPEED	33
S102	START/REST	REST

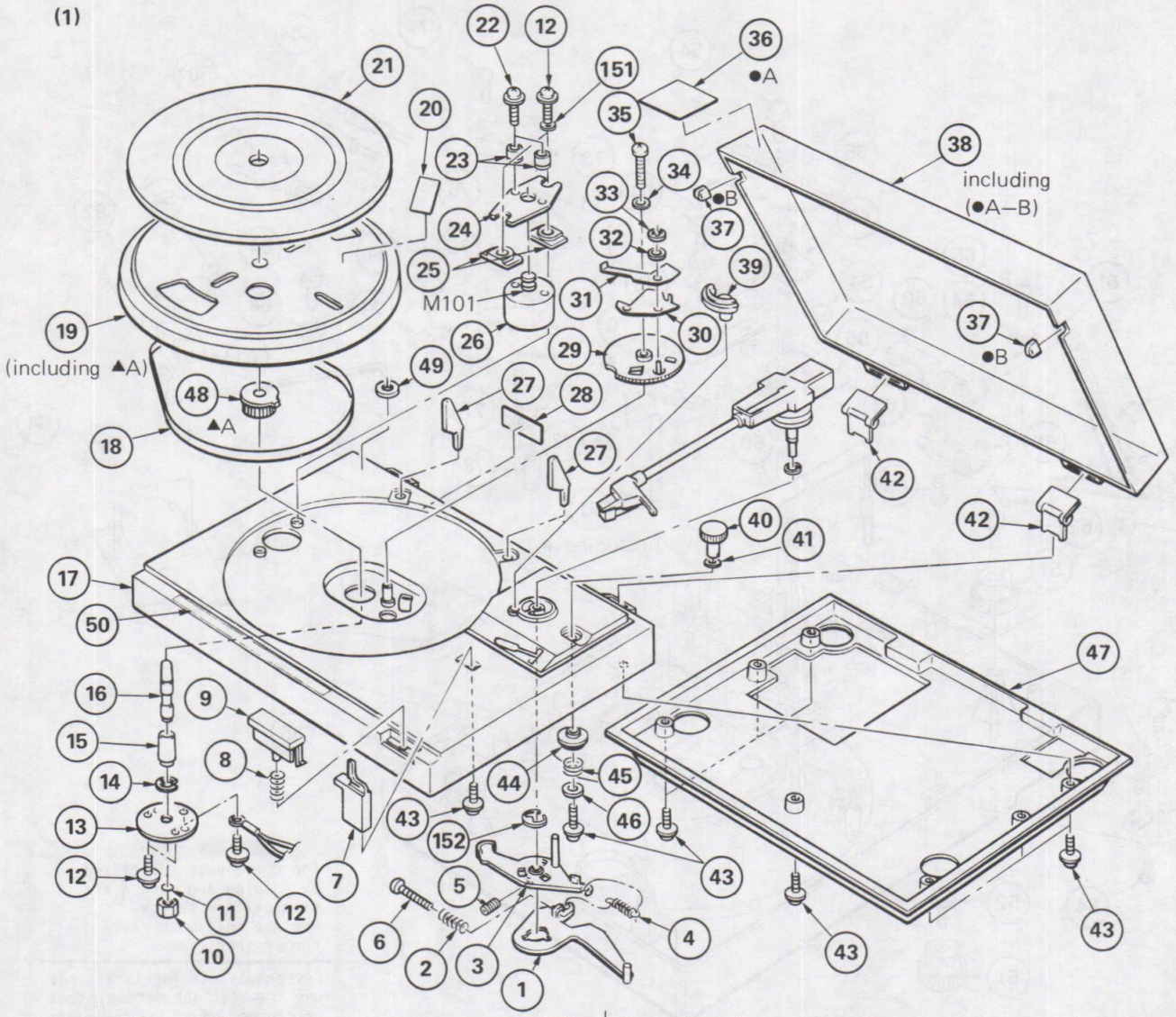
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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.

SECTION 5
EXPLODED VIEWS AND PARTS LIST

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number on the remark column.

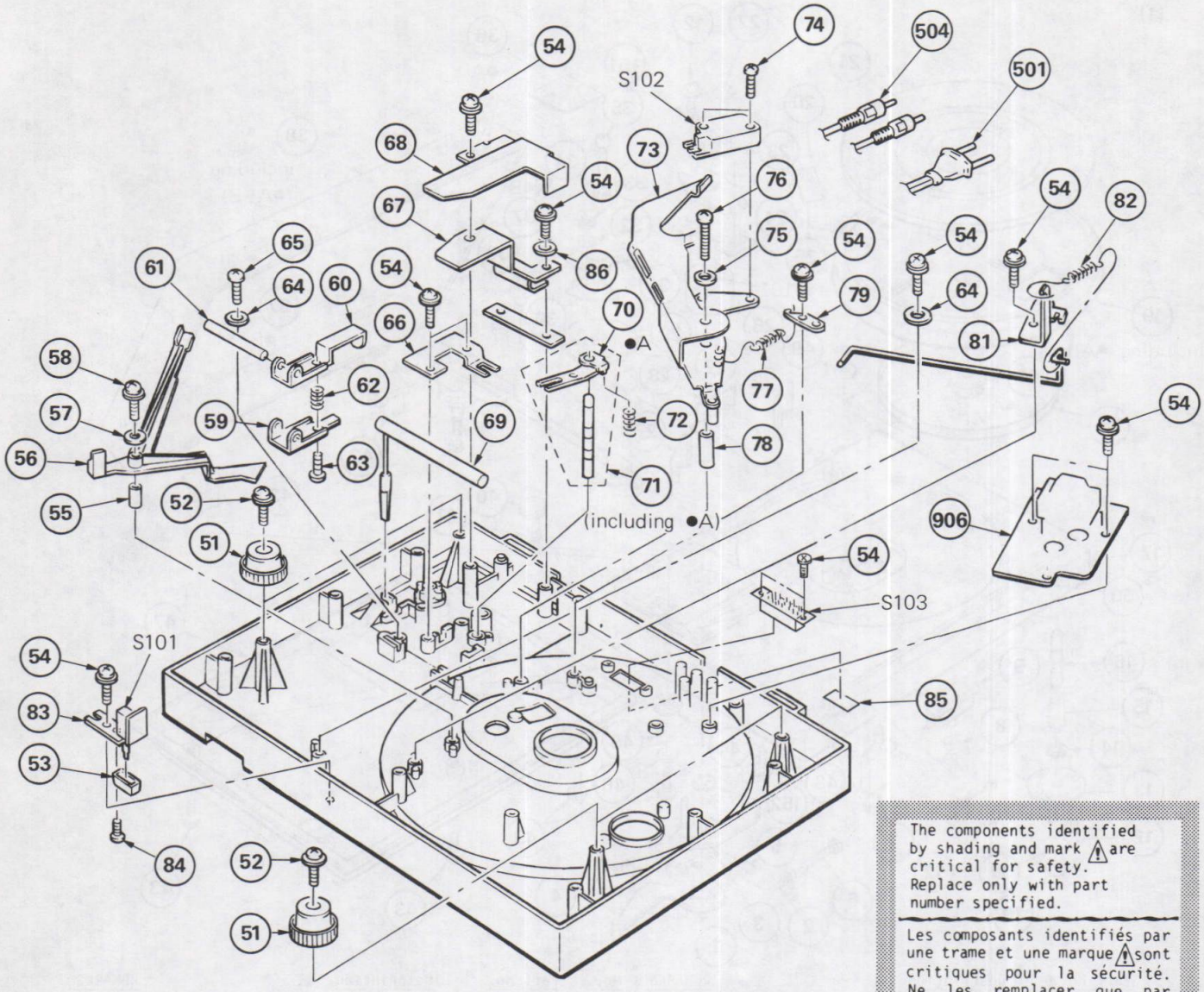
(1)



No.	Part No.	Description	REMARKS
1	4-875-214-00	LEVER, SWITCH	
2	4-836-836-00	SPRING, COMPRESSION	
3	*4-858-234-00	LEVER, RETURN	
4	3-536-780-00	SPRING, TENSION	
5	3-701-508-00	SET SCREW, DOUBLE POINT 3X6	
6	7-682-553-09	SCREW +B 3X20	
7	4-875-208-00	(SILVER)...REST, ARM	
	4-875-208-31	(BLACK)....REST, ARM	
8	3-533-014-00	SPRING, COMPRESSION	
9	4-881-608-00	(SILVER)...KNOB, REJECT	
	4-881-608-11	(BLACK)....KNOB, REJECT	
10	4-908-104-01	NUT, BEARING	
11	4-908-141-01	RETAINER (S), THRUST	
12	3-703-137-00	SCREW, TAPPING	
13	4-908-101-01	HOLDER, BEARING	
14	7-624-133-34	STOP RING 8, TYPE-CE	
15	4-908-102-01	BEARING	
16	4-889-523-01	SHAFT, CENTER	
17	4-889-531-01	(SILVER)...FRAME	
	4-889-531-11	(BLACK)....FRAME	
18	4-827-489-XX	BELT	
19	X-4881-615-1	TURNTABLE ASSY	
20	4-858-264-21	LABEL, CAUTION	
21	4-887-941-01	(Canadian,AEP,UK,E)...SHEET, TURNTABLE	
	4-887-941-11	(US).....SHEET, TURNTABLE	
22	4-909-062-01	SCREW MOTOR	
23	4-909-061-01	CUSHION MOTOR	
24	*4-908-106-01	BRACKET (B), MOTOR	
25	4-908-120-01	RUBBER, FLOATING	
26	4-908-116-01	COVER, VIBRATION PROOF	

No.	Part No.	Description	REMARKS
27	4-874-262-00	GUIDE, RECORD	
28	*4-889-515-01	(AEP).....LABEL, MODEL NUMBER	
	*4-889-516-01	(US,Canadian)...LABEL, MODEL NUMBER	
	*4-889-518-01	(E).....LABEL, MODEL NUMBER	
	*4-889-517-01	(UK).....LABEL, MODEL NUMBER	
29	4-903-339-01	GEAR, DRIVE	
30	X-4852-007-2	CLUTCH (B) ASSY	
31	4-852-013-05	CLUTCH (A)	
32	7-688-003-11	W 3, MIDDLE	
33	7-624-190-81	STOP RING 2, TYPE-CS	
34	4-812-554-00	WASHER	
35	7-685-152-14	SCREW +P 3X25 TYPE2 SLIT	
36	*3-703-705-01	STICKER, SONY SYMBOL (30)	
37	4-876-304-00	CUSHION, DUST COVER	
38	X-4877-804-0	COVER ASSY, DUST	
39	X-4903-302-1	PLATE ASSY, UP AND DOWN	
40	4-881-633-00	KNOB (I), IFC	
41	4-844-041-00	WASHER, (N)	
42	4-857-653-00	HINGE, DUST COVER	
43	3-703-136-00	SCREW, TAPPING	
44	4-903-323-01	CAM, IFC	
45	4-874-250-00	SPRING	
46	0-056-028-00	WASHER, PLAIN, 14 DIA.	
47	4-889-532-11	(US).....PLATE, BOTTOM	
	4-889-532-01	(Canadian,AEP,UK,E)...PLATE, BOTTOM	
48	4-868-052-00	GEAR, CENTER	
49	3-701-806-00	ADAPTOR, 45, (E)	
50	4-889-525-01	PANEL, CONTROL	
151	*4-301-647-00	WASHER, SPECIAL	
152	7-624-133-54	STOP RING 10, TYPE-CE	

(2)



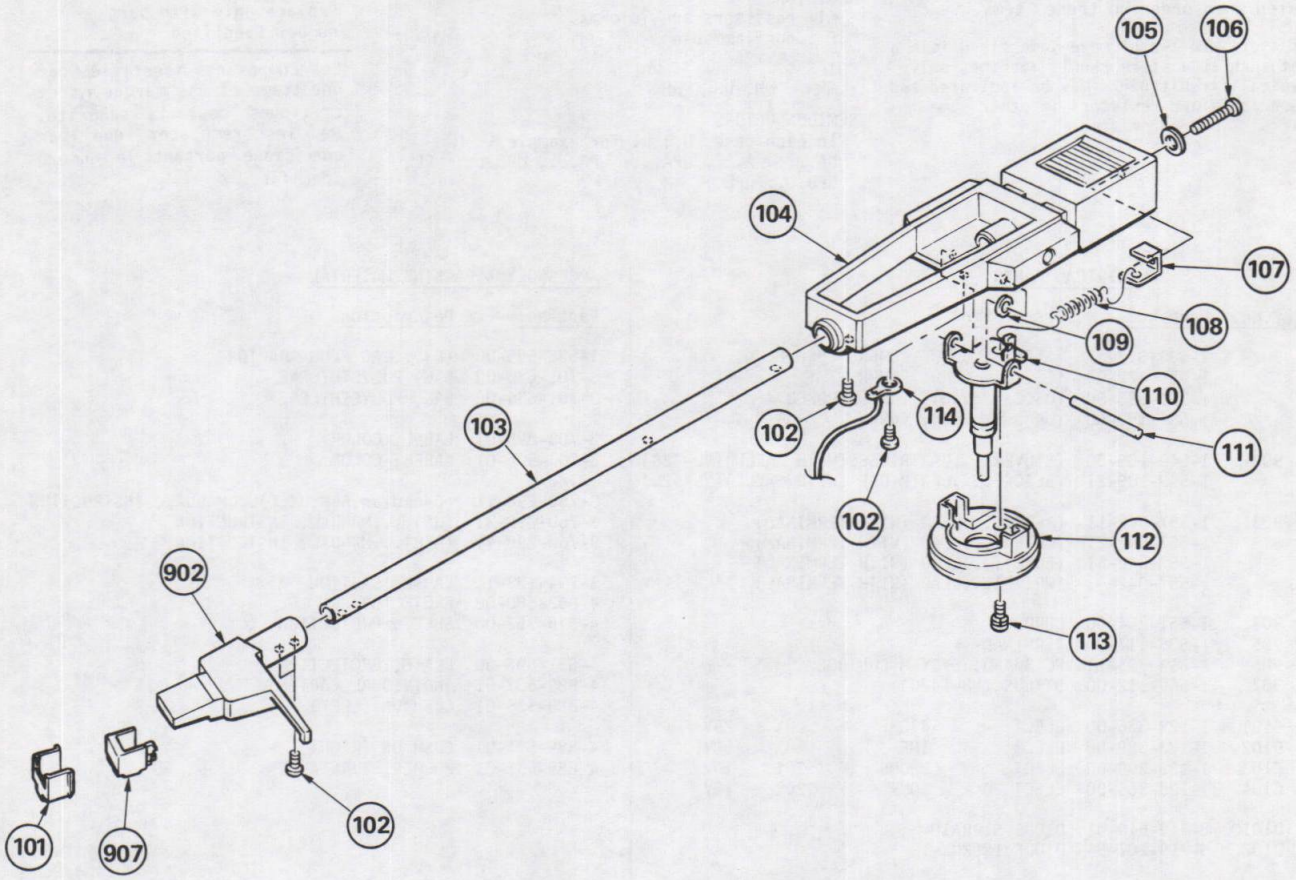
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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.

No.	Part No.	Description	REMARKS
51	X-4903-301-1	INSULATOR ASSY	
52	7-685-650-21	SCREW +BVTP 3X16 TYPE2 SLIT	
53	4-870-730-21	KNOB, SPEED	
54	3-703-137-00	SCREW, TAPPING	
55	4-861-933-00	SLEEVE (D)	
56	*4-858-240-00	LEVER (M), CLUTCH	
57	4-812-554-00	WASHER	
58	7-685-152-14	SCREW +P 3X25 TYPE2 SLIT	
59	*4-903-321-01	LEVER (G), LIFTER	
60	*4-903-317-01	LEVER (F), LIFTER	
62	4-881-642-00	SPRING, COMPRESSION	
63	7-621-775-50	SCREW +B 2.6X10	
64	*4-301-647-00	WASHER, SPECIAL	
65	3-703-136-00	SCREW, TAPPING	
66	*4-903-320-01	RETAINER (D), LIFTER	
67	*4-889-524-01	PLATE (LOWER), SHIELD	
68	*4-889-526-01	PLATE (UPPER), SHIELD	
69	4-877-824-00	CAM, LIFTER	
70	*4-876-317-00	GUIDE, LIFTER	
71	A-4637-063-A	ROD ASSY (P), PUSH	

No.	Part No.	Description	REMARKS
72	4-903-331-01	SPRING (LIFTER), COMPRESSION	
73	*X-4877-805-6	LEVER ASSY, MAIN	
74	7-682-150-01	SCREW +P 3X12	
75	3-610-931-11	SPACER, SHAFT, DRUM, HEAD	
76	7-685-666-21	SCREW +BVTP 4X30 TYPE2 SLIT	
77	4-870-785-00	SPRING, TENSION (MAIN LEVER)	
78	4-875-207-00	SLEEVE	
79	*4-870-752-00	HOLDER, SPRING	
80	4-875-204-00	SPRING	
81	*4-875-205-00	PLATE, FIXED	
82	3-491-240-00	SPRING, TENSION	
83	*4-889-527-01	BRACKET, SWITCH	
84	7-621-775-08	SCREW +P 2.6X3	
85	4-881-683-00	(E)...LABEL, VOLTADGE	
901	⚠.1-534-817-XX	(AEP)....CORD, POWER, EULO PLUG	
	⚠.1-551-472-00	(E).....CORD, POWER	
	⚠.1-551-628-00	(US,Canadian)...CORD, POWER	
	⚠.1-556-562-00	(UK).....CORD, POWER	
904	1-551-294-00	CORD	
906	*1-614-795-11	PC BOARD, SYSTEM CONTROL	
86	7-623-422-07	WASHER 3φ	

(3)



No.	Part No.	Description	REMARKS
101	3-706-613-00	PROTECTOR	
102	7-685-103-24	(SILVER)...SCREW +P 2X5	TYPE2 SLIT
	7-685-103-29	(BLACK)....SCREW +P 2X5	TYPE2 SLIT
103	4-889-528-01	(SILVER)...PIPE, ARM	
	4-889-528-11	(BLACK)....PIPE, ARM	
104	4-889-529-01	(SILVER)...JOINT, PIPE	
	4-889-529-11	(BLACK)....JOINT, PIPE	
105	7-688-003-11	W 3, MIDDLE	
106	7-682-555-04	(SILVER)...SCREW +B 3X30	
	7-682-555-09	(BLACK)....SCREW +B 3X30	
107	4-868-016-00	HOOK, SPRING	
108	4-889-510-00	(US,Canadian)...SPRING, TENSION	
109	3-701-437-01	WASHER	
110	X-4881-605-1	SHAFT ASSY, ROTARY	
111	4-880-619-00	PIN, HORIZONTAL	
112	4-880-631-00	(SILVER)...JOINT, CENTER	
	4-880-631-11	(BLACK)....JOINT, CENTER	
113	7-682-647-01	(SILVER)...SCREW +PS 3X6	
	7-682-647-09	(BLACK)....SCREW +PS 3X6	
114	7-623-505-01	LUG, 2	
902	1-549-109-00	(SILVER)...CARTRIDGE (WITH SHELL)(VL-42G)	
	1-549-109-21	(BLACK)....CARTRIDGE (WITH SHELL)(VL-42G)	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

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

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.

ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	⚠.1-534-817-XX	(AEP)....CORD, POWER, EULO PLUG
	⚠.1-551-472-00	(E).....CORD, POWER
	⚠.1-551-628-00	(US,Canadian)...CORD, POWER
	⚠.1-556-562-00	(UK).....CORD, POWER
902	1-549-109-00	(SILVER)...CARTRIDGE (WITH SHELL)(VL-42G)
	1-549-109-21	(BLACK)....CARTRIDGE (WITH SHELL)(VL-42G)
903	1-557-042-11	(RED).....LEAD (WITH TERMINAL)
	1-557-042-21	(GREEN)...LEAD (WITH TERMINAL)
	1-557-042-31	(BLUE)....LEAD (WITH TERMINAL)
	1-557-042-41	(WHITE)...LEAD (WITH TERMINAL)
904	1-551-294-00	CORD
905	*1-535-117-00	TERMINAL
906	*1-614-795-11	PC BOARD, SYSTEM CONTROL
907	1-549-112-00	STYLUS (ND-142G)
C101	1-123-336-00	ELECT 470MF 20% 25V
C102	1-123-380-00	ELECT 1MF 20% 50V
C103	1-123-309-00	ELECT 330MF 20% 10V
C104	1-123-356-00	ELECT 10MF 20% 16V
D101	8-719-510-01	DIODE S1RBA10
D102	8-719-107-94	DIODE 1SS202-1
IC101	8-759-103-35	IC UPC1470H
M101	8-835-126-01	MOTOR, DC (DNR-7600A)
R101	⚠.1-217-383-00	FUSIBLE 4.7 5% 1/4W F
R102	1-214-723-00	METAL 560 1% 1/4W
R103	1-214-721-00	METAL 470 1% 1/4W
R104	1-214-729-00	METAL 1K 1% 1/4W
RV101	1-226-232-00	RES, ADJ, CARBON 500
RV102	1-226-232-00	RES, ADJ, CARBON 500
S101	1-570-166-11	SWITCH, PUSH (1 KEY)
S102	1-570-149-11	SWITCH, MICRO
S103	1-552-535-00	SWITCH, POWER & VOLTAGE CHANGE
T101	⚠.1-448-043-11	(US,Canadian)...TRANSFORMER, POWER
T101	⚠.1-448-044-11	(AEP,UK).....TRANSFORMER, POWER
T101	⚠.1-448-045-11	(E).....TRANSFORMER, POWER

ACCESSORY & PACKING MATERIAL

Part No.	Description
1-526-565-00	(E)....AC PLUG ADAPTOR
3-701-630-00	BAG, POLYETHYLENE
3-701-634-00	BAG, POLYETHYLENE
3-703-895-01	LABEL, COLOR
3-703-906-01	LABEL, COLOR
3-760-298-11	(Canadian,AEP,UK,E)...MANUAL, INSTRUCTION
3-760-298-21	(US)....MANUAL, INSTRUCTION
3-760-298-41	(AEP)...MANUAL, INSTRUCTION
3-794-123-11	LABEL, CAUTION
4-862-680-00	PROTECTOR
4-876-352-00	SHEET, PROTECTION
4-881-698-00	PLATE, PROTECTION
4-889-533-01	INDIVIDUAL CARTON
4-889-536-01	CUSHION (LEFT)
4-889-537-01	CUSHION (RIGHT)
4-889-538-01	HOLDER, TURNTABLE