# GARRARD SP25MKIV



### RECORD CHANGER

#### **SPECIFICATIONS**

**Speeds:** 33 <sup>1</sup>/3, 45, 78 rpm

Drive system: Idler-drive

Motor: 4-pole shading synchronous

Cartridge: Magnetic type, SONY VL-30G

Optimum stylus force: 3 g

Stylus: SONY diamond stylus ND-133 G (0.5 mil)



#### **SECTION 1**

#### DISASSEMBLY AND REPLACEMENT

Note: All screws are Phillips type (cross recess type) unless otherwise indicated.

(-): slotted head.

#### 1-1. STYLUS TIP REPLACEMENT

See Fig. 1-1.

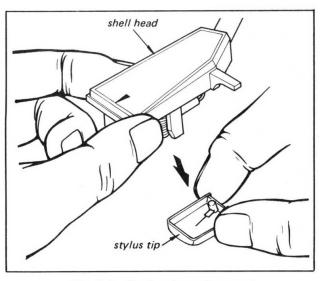


Fig. 1-1. Stylus tip replacement

#### 1-2. CARTRIDGE REPLACEMENT

- 1. Place the tonearm on the tonearm rest.
- 2. See Fig. 1-2 and 1-3.

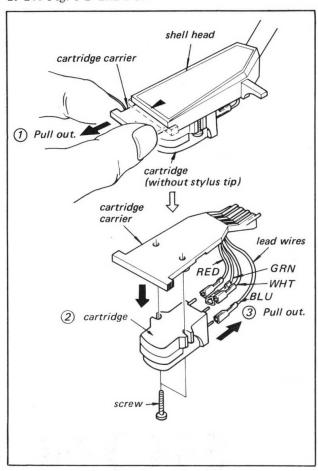


Fig. 1-2. Cartridge replacement

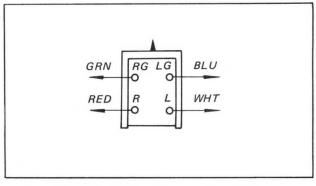


Fig. 1-3. Wiring diagram of cartridge

#### 1-3. TONEARM REPLACEMENT

- 1. Unsolder the four lead wires from the terminal strip shown in Fig. 1-5.
- 2. Carefully unstick the tape holding the lead wires to the turntable base as shown in Fig. 1-5.
- 3. See Fig. 1-4 (  $\bigcirc$  ) ~  $\bigcirc$  ).
- 4. When reinstalling the tonearm, refer to the lead wire connection shown in Fig. 1-5.

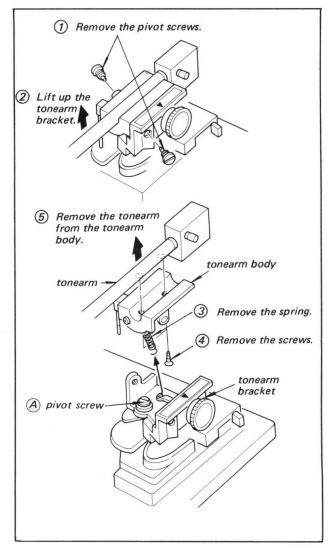


Fig. 1-4. Tonearm replacement

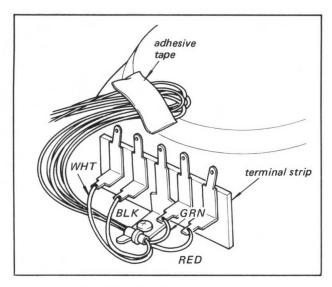


Fig. 1-5. Lead wire connection

#### 1-4. TONEARM BRACKET REPLACEMENT

- 1. Remove the tonearm as described in Procedure 1-3.
- 2. Remove the tonearm bracket from the tonearm lever by taking out the pivot screw (A) shown in Fig. 1-4.
- 3. Install the overload spring as shown in Fig. 1-6.

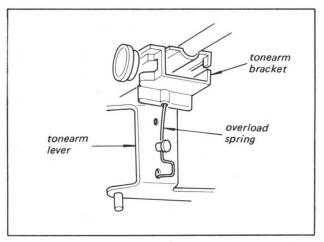


Fig. 1-6. Overload spring installation

#### 1-5. TURNTABLE REMOVAL

See Fig. 1-7 (  $(1) \sim (4)$  ).

**Note:** Refer to Fig. 1-8 for turntable retaining clip installation.

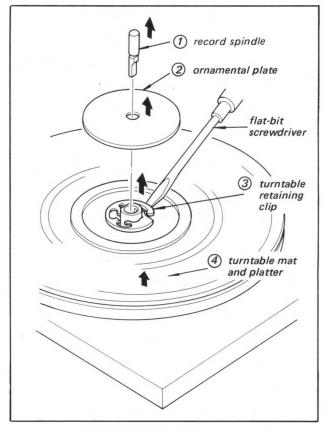


Fig. 1-7. Turntable removal

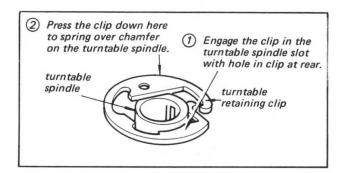


Fig. 1-8. Turntable retaining clip installation

#### 1-6. TONEARM CAM REPLACEMENT

- 1. Turn the turntable clockwise by hand so that the guide plate is located at the center of long slit of tonearm cam as shown in Fig. 1-9.
- 2. See Fig. 1-9 (  $\bigcirc$  ~  $\bigcirc$  ).
- 3. Remove the turntable as described in Procedure 1-5.
- 4. See Fig. 1-10 (  $\bigcirc$  ~  $\bigcirc$  ).
- 5. Remove the tonearm cam carefully.

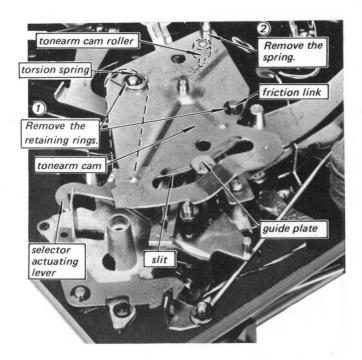


Fig. 1-9. Tonearm cam replacement (1)

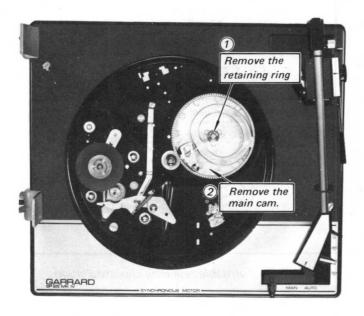


Fig. 1-10. Tonearm cam replacement (2)

Note: When refitting the tonearm cam, first attach the friction link to the cam with the retaining ring then with the selector actuating lever held in position shown in Fig. 1-9, locate the tonearm cam roller in the turntable base slot and main cam track, before locating it under its guide plate and on its pivot pin. At the same time, the main cam should come to the position shown in Fig. 1-11.

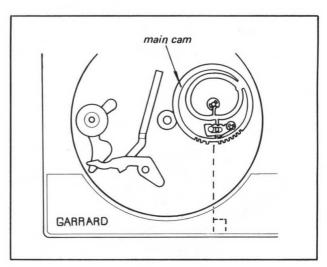


Fig. 1-11. Tonearm cam reinstallation

#### 1-7. MOTOR REPLACEMENT

- 1. See Fig. 1-12.
- 2. See Fig. 1-13.
- 3. This frees the motor from the turntable base.

**Note:** After replacing the motor, perform intermediate wheel height adjustment as described in Procedure 2-5 on page 6.

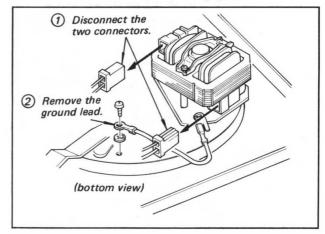


Fig. 1-12. Motor replacement (1)

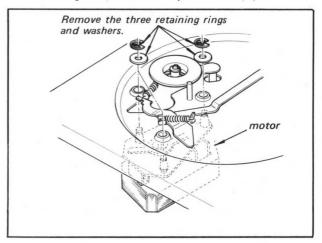


Fig. 1-13. Motor replacement (2)

#### **SECTION 2**

#### ADJUSTMENT AND MAINTENANCE

#### 2-1. STYLUS FORCE ADJUSTMENT

- Check that mechanism is not engaged by rotating the turntable slowly clockwise by hand until free running. Make sure cueing lever is set down.
- 2. Set the stylus force dial to zero.
- 3. Lift the tonearm from the its rest and remove the stylus cover.
- 4. Loosen the counterbalance weight clamp screw (see Fig. 2-1) and slide the counterbalance weight to position which balances the tonearm with the stylus tip about 3 mm (1/8") above the turntable mat.
- 5. Clamp the counterbalance weight.
- Set the stylus force dial to 3. This shows the stylus force recommended for the cartridge (VL-30G). Numbers on the dial represent 0 to 5 grams.

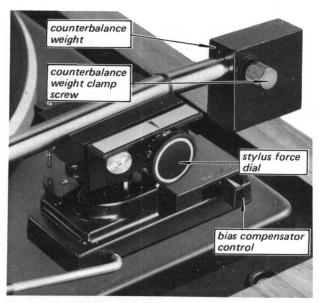


Fig. 2-1. Stylus force adjustment

#### 2-2. BIAS COMPENSATOR ADJUSTMENT

Move the bias compensator control shown in Fig. 2-1 along its scale to the figure which corresponds to the previously-set figure for stylus force.

#### 2-3. STYLUS DROP-POINT ADJUSTMENT

This adjustment is factory-set but can be altered, if necessary, by turning the stylus drop-point adjustment screw shown in Fig. 2-2.

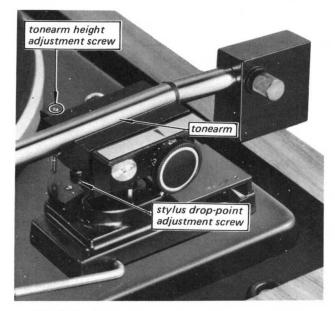


Fig. 2-2. Stylus drop-point and tonearm height adjustment

Table 2-1. Stylus drop-point adjustment

Turning direction of adjustment screw	Drop-point
Clockwise	Inwards
Counterclockwise	Outwards

#### 2-4. TONEARM HEIGHT ADJUSTMENT

Adjust the tonearm height as shown in Fig. 2-3 by turning the tonearm height adjustment screw shown in Fig. 2-2.

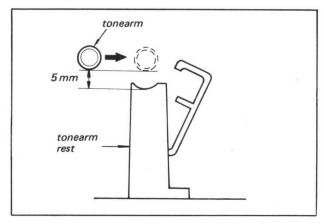


Fig. 2-3. Tonearm height adjustment

Table 2-2. Tonearm height adjustment

Turning direction of adjustment screw	Tonearm height
Clockwise	Ascend
Counterclockwise	Descend

### 2-5. INTERMEDIATE WHEEL HEIGHT ADJUSTMENT

- Adjust the intermediate wheel height by means of the blade (See Fig. 2-4) so that the intermediate wheel runs in the center of the correct pulley step without rubbing the adjacent step.
- 2. If necessary, adjust intermediate wheel height by means of the blade shown in Fig. 2-4.

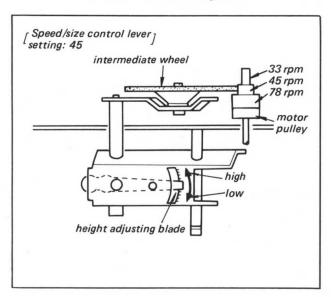


Fig. 2-4. Intermediate wheel height adjustment

## 2-6. ADAPTATION TO LOCAL POWER LINE FREQUENCY (See Fig. 2-5.)

This unit can be adapted to operate at another power-line frequency by changing the motor and motor pulley assembly and motor loom assembly. Refer to the motor replacement as described in Procedure 1-7.

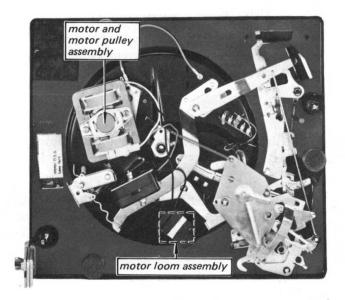


Fig. 2-5. Adaptation to local power line frequency

Table 2-3. Adaptation to local power line frequency

	Motor and motor pulley ass'y Part No.	Motor loom ass'y Part No.
220/240 volts	61027/014 (☆)	60365 (☆)
50 Hz	X-4890-507-0 (○)	X-4890-510-0 (○)
110/120 volts	61027/021 (☆)	61160/004 (\$\text{\$\decirc}\$)
60 Hz	X-4890-508-0 (○)	X-4890-509-0 (\$\tilde{\circ}\$)

Note: (☆): Garrard Part No. (○): SONY Part No.

#### 2-7. LUBRICATION (See Fig. 2-6.)

When the need is apparent, apply one or two drops of SONY oil OL-2K to the arrow portion (turntable shaft, intermediate wheel and main cam) shown in Fig. 2-6 and the cap of the motor shaft.

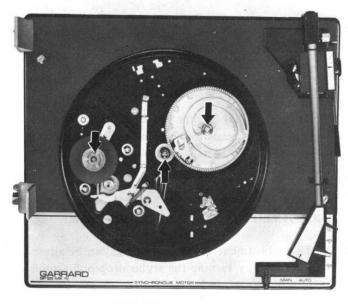


Fig. 2-6. Lubrication

#### **SECTION 3**

#### **TROUBLESHOOTING**

Note: Numbers in circle (  $\P$   $\sim$   $\P$  ) refer to the exploded views.

Fault	Cause	Remedy
TURNTABLE SPEED  (a) Turntable fails to start, runs slowly or at wrong speed when switched on.	1 Oil or dirt on driving surfaces.	1 Remove turntable (See Procedure 1-7) and clear inside rim, periphery of intermediate wheel 1 an motor pulley 2 .
	2 Faulty intermediate wheel spring 3 .	Check that the spring is secured.     Move operating control to AUTO — spring should stretch. If it does not, replace it.
	3 Intermediate wheel support bracket 1 not free.	3 Wheel 1 should engage motor pulley 2 firmly when switched on and retract when switched off If not, lightly oil spindles of the speed change mechanism assembly or replace damaged parts.
	4 No voltage or low voltage at motor <b>5</b> .	4 Remove loom plugs from motor, switch on and check wiring with voltmeter. If no power, check back to source outlet, looking for loose connections, faulty switch contacts etc. Voltage should not be lower than 110 V if low range supply or 220 V if high range.
	5 Faulty motor coil.	5 Remove plugs from motor 5 to check continuity o coils with ohmmeter. Replace motor if necessary
	6 Bearings of motor 5 out of line.	6 If rotor does not spin freely, tap the motor body with a small block of wood (e.g. screwdriver handle) to realign bearings. Use only thin oil on these bearings thick oil will clog them.
	7 Motor pulley 2 or intermediate wheel 1 height incorrectly.	7 Adjust the intermediate wheel height as described in procedure 2-5 on page 6.
	8 Bearings not free.	8 Check motor <b>⑤</b> , intermediate wheel <b>①</b> and turntable bearings. Clean and lightly oil if necessary. See lubrication as described in Procedure 2-7 on page 6.
(b) Irregular turntable speed (wow and flutter).	1 Various.	1 See Fault (a). Causes and Remedies 1, 7 and 8.
grave and the second	2 Worn or oversize holes in records.	2 Align the record concentrically on the turntable by hand. Avoid using records on a record changer whose mechanism may be wearing the record holes.
	3 Damaged rotor shaft of motor	3 Replace motor <b>5</b> .
	4 Flats on driving surface of intermediate wheel 1.	4 If running the unit for a few hours does not cure the fault, replace the wheel   Note: Do not switch the unit off from the powe supply before it has stopped automatically, a the unretracted wheel  may form flats.
TONEARM MOVEMENT (c) Tonearm tracks incorrectly.	Dust accumulated around stylus tip.	1 Clean carefully.
	2 Stylus force too low.	2 Check that the force is not lower than that recommended for the cartridge. Adjust if necessary - Refer to "Stylus force adjustment" described in Procedure 2-on page 5.
	3 Bias compensator incorrectly set.	3 Make sure that the bias compensator is set correctly to correspond to the stylus force applied. Refer to "Bia compensator adjustment" described in Procedure 2-2 on page 5.
	4 Worn or wrong size of stylus tip radius.	4 Replace stylus.
	5 Tonearm leads tight or trapped at rear of arm.	5 Make sure leads are slack and check that they are no caught in or touching mechanism below the unit plate

	Cause	Remedy
	6 Groove guard on record (raised rim).	6 If used in "Auto" mode, the stylus may land too far out and slide down the slope of the raised rim on certain records, jumping the first playing grooves. Reset the stylus drop-point position so that it lands further in. Refer to stylus drop-point adjustment described in Procedure 2-3 on page 5.
	7 Body of tonearm cartridge touches record.	7 Make sure any cartridge fixing screws are secure and that the slide is in position properly.
	8 Counterbalance weight clamped off center.	8 Check that the weight <b>6</b> is clamped in an untwisted attitude.
	9 Excessive friction in friction link 7.	9 Apply a drop of thin oil inside slot. See Fig. 3-1
	10 Automatic trip links not free.	10 Move tonearm inwards by hand checking for link fouling trip pawl mechanism on main cam (8) and auto stop link (9). Reshape or replace as necessary.
	11 Damaged tonearm pivot screw (1) , (1) , (2) .	11 Replace as necessary.
(d) Tonearm lands on record too far out and/or in, on	1 Drop-point incorrectly set.	1 Refer to "stylus drop-point adjustment" described in Procedure 2-3 on page 5.
"Auto" play.	2 Friction link 7 requires lubrication.	2 Apply a drop of thin oil inside slot. See Fig. 3-1
(B) tone	earm cam  Fig. 3-1. Lubrication p	Apply a drop of thin oil.
(e) Tonearm fails to lower.	1 Cueing lever (18) not lowered.	Lower the cueing lever and check cueing height se correctly.
(e) Tonearm fails to lower.	1 Cueing lever (18) not lowered.  2 Lifting spindle mechanism (10), etc.) not free.	correctly.  2 With tonearm raised slightly, lift the platform mouldin at the top of the spindle. Although damped it shoul return slowly through pressure of spring 15. If no check for damage or restriction. Also check the
(e) Tonearm fails to lower.	2 Lifting spindle mechanism	correctly.  2 With tonearm raised slightly, lift the platform mouldin at the top of the spindle. Although damped it should return slowly through pressure of spring
(e) Tonearm fails to lower.	2 Lifting spindle mechanism ( 12 , etc.) not free.	correctly.  2 With tonearm raised slightly, lift the platform mouldin at the top of the spindle. Although damped it shoul return slowly through pressure of spring
	2 Lifting spindle mechanism ( 10, etc.) not free.  3 Tonearm pivot screws 10 and 12 not free.	correctly.  2 With tonearm raised slightly, lift the platform mouldin at the top of the spindle. Although damped it should return slowly through pressure of spring
	2 Lifting spindle mechanism (  , etc.) not free.  3 Tonearm pivot screws   and  and  and  and  are not free.	correctly.  2 With tonearm raised slightly, lift the platform mouldin at the top of the spindle. Although damped it shoul return slowly through pressure of spring
	2 Lifting spindle mechanism (  , etc.) not free.  3 Tonearm pivot screws   and  and  and  and  are not free.	correctly.  2 With tonearm raised slightly, lift the platform moulding at the top of the spindle. Although damped it should return slowly through pressure of spring
To describe the state of the st	2 Lifting spindle mechanism (	correctly.  2 With tonearm raised slightly, lift the platform mouldin at the top of the spindle. Although damped it should return slowly through pressure of spring for the check for damage or restriction. Also check that lifting spring for has not slipped from its retaining shoulder on the spindle. See Fig. 3-2.  3 Remove the pivots and check them for damage Replace them if necessary.
To describe the state of the st	2 Lifting spindle mechanism (	correctly.  2 With tonearm raised slightly, lift the platform mouldin at the top of the spindle. Although damped it shoul return slowly through pressure of spring

Fault	Cause	Remedy
(f) Tonearm begins to lower then swings in.	1 Tonearm leads tight or trapped.	Slacken if necessary and see that they are not caught in mechanism below the unit plate.
	2 On "Auto" play, lifting spring for friction spring for binding (See Fig. 3-2).	2 Check that the lifting spring is secure and moves freely. With lifting spring held clear, deflect friction spring away from tonearm cam (§); it should spring back when released. Replace damaged spring (s). See Fig. 3-2.
(g) Tonearm fails to lift and return at the end of the record.	1 Various.	1 See Fault (c). Causes and Remedies 1 to 5, 7, 8 and 9. Check that the lug on the trip pawl mounted on main cam (S) is square. Reshape it if necessary and make sure the trip pawl pivots freely.
	2 Non-standard record.	2 Replace record.
(h) Tonearm lowers too slowly when cueing.	Tight bearings or mechanism fouling.	Make sure that the tonearm pivots freely and that tonearm leads or mechanism do not restrict its movement. Note that a descent time of up to several seconds is considered acceptable and is unlikely to be caused by excess damping fluid.
(i) Tonearm wavers when low- ered during cueing.	1 Play in lowering mechanism.	1 Make sure lock nut (s) is in its factory set position keeping spring (s) in compression. The top of the nurshould be \( \frac{1}{16} \) (1.5 mm) in from the underside of the cast lug on tonearm body (s). Also make sure that spring (s) is positioned so that its lower tail lodger against lifting platform (s) and its top tail pushes against the back of the boss on upper casting (s) thus preventing slack movement in the lifting platform
	2 Lowering platform too smooth.	2 Rough up the underside of the platform rivetted to the top of tonearm lever (2) with fine emery paper
(j) Fails to select, switches off.	1 Interselector lever bent.	Make sure tail of interselector lever on lower casting makes appropriate contact with tail of switch lever 25.
NOISE (k) Rumble, heard through speaker (s) while stylus is	1 Rumble on record.	Check by playing other records, that a particula record is not at fault.
in blank record groove.	Lack of lubrication of drive mechanism.	2 See lubrication as described in procedure 2-7 on page 6.
	3 Intermediate wheel 1 rub- bing against side of motor	3 Check heights of wheel. See intermediate wheel heigh described in procedure 2-5 on page 6.
	pulley step.  4 Driving surface of intermediate wheel  dirty, indented or hardened.	4 Clean the wheel with a cloth or scrape its driving surface to remove dirt. If this and running the unit fo a few hours does not help, replace the wheel
	5 Faulty installation	5 Check that the unit floats freely on its mounting springs  with damping pads  in place, that the motor  hangs freely in its rubber grommets  and that no part of the mechanism is in contact with the mounting board.
	6 Worn or dirty turntable bearings.	6 Clean cushion ring (3), thrust washers (3), (3) and ball race (32). Oil the ball race and replace the thrust washers if worn, or the rubber cushion ring if hard ened. Make sure cushion ring (33) is positioned on the cast turntable boss. Check that thrust washers have polished faces to bearings.
(I) No sound.	1 Open circuit in tonearm leads.	1 Check the continuity of the tonearm leads from th cartridge to the tag strip (disconnect the cartridge before making this test). Make sure push-on tags ar firmly in position.

## SECTION 4 DIAGRAMS

#### 4-1. SCHEMATIC DIAGRAM

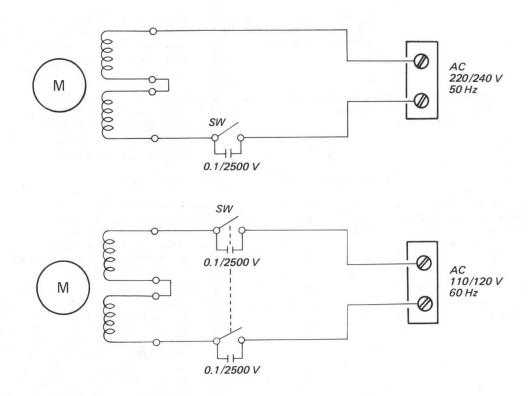


Fig. 4-1.

#### 4-2. PHONO-OUT WIRING DIAGRAM

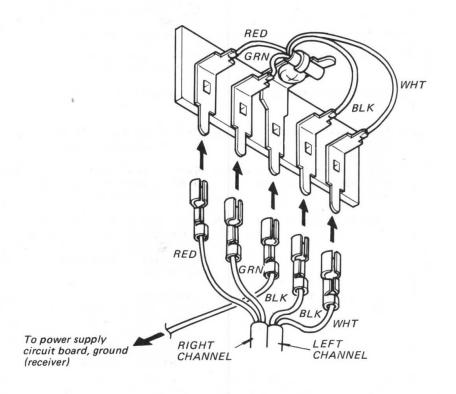


Fig. 4-2.

00432/007 4-890-530-00 Retaining Ring 01515/010 4-890-603-00 Screw 44943 4-890-595-00 Caring, tortion 72681 4-890-587-00 44588/001 4-890-539-00 Spring, lifting 58316 4-890-532-00 Collar 70928 4-890-585-00 Pad, bearing 44596 4-890-542-00 Spring, index 77324 4-890-537-00 Link, friction 43201 4-890-528-00 Ball, bearing 73128 4-890-540-00 Lever, selector 77320 4-890-536-00 Lever, tonear 00432/007 4-890-530-00 Retaining Ring 42561 4-890-531-00 Washer, spring 74491 4-890-602-00 Retainer, overload spr 77332 4-890-586-00 Lever, switch 43200 4-890-525-00 Ball, bearing 00432/007 4-890-530-00 Retaining Rin nbly (110/120 V AC, 60 Hz) (A) 00432/007 4-890-530-00 Betaining Rin 41218/008 4-890-632-00 Washer 44825 4-890-601-00 Spring Communico. 77377 4-890-558-00 Lever, speed o 51333 4-890-629-00 Plate, insulation 00451/002 4-890-634-00 Nut 75363 4-890-561-00 Cam, speed co 41759 4-890-592-00 Spring 00451/002 4-890-634-00 Nut 9-958-014-01 99 9 58327 4-890-600-00 Lever, reject 00201/002 4-890-635-00 Retaining Ring 58211 , 4-890-559-00 Bracket, index; 73671 X-4890-515-0 Spring Ass'y, r 73563 4-890-599-00 Plate, anchor 58208 4-890-557-00 Bracket, suppo 44328 4-890-591-00 Screw 73662 4-890-590-00 Roller 00852/012 4-890-593-00 Washer shake 0 0 Sony Corporation © 1974 70447 4-890-524-00 **(1)** Pad, foam dan 73542 4-890-523-00 Spring, mount 77275/001 X-4890-511-0 Base Ass'y, turntable

- Items without part number and description are not available.
- O All screws are Phillips (cross recess) type

77188 4-890-564-00 Trim, front con

77185 4-890-584-00 Cover, control

77186 4-890-553-00 Knob, operating control

72181 . . . . . . . Garrard Part No. 4-890-615-00 . . . . SONY Part No. Ex. Spindle 4-890-582-00 Spindle, record 4-890-581-00 Record Adaptor, large hole 4-890-580-00 Ornamental Plate, turntable 4-890-501-00 (3) 4-890-579-00 Retaining Clip, 3 C E3 4-890-577-00 Decor Plate, to 4-890-504-00 Tube Extensio 4-890-578-00 Mat\_turntable 4-890-623-00 **(3)** Ring, cushion X-4890-502-0 Body Ass'y, to 4-890-624-00 Washer, thrus 4-890-621-00 Piece, insulation 4-890-620-00 Nut, overload 4-890-505-00 Spring, stylus force X-4890-513-0 Contact Moulding, with tonearm lead 4-890-624-00 Washer, thrust 4-890-618-00 Pad, anchor 4-890-625-00 B Ring, cushion 44279/002 4-890-619-00 Screw, anchor 4-890-507-00 Washer, shake 4-890-583-00 Slide, cartridg 4-890-617-00 (1) Spring 01512/001 4-890-506-00 Screw, self-taj 03053/005 4-890-616-00 (B) Nut, lock Cartridge, VL-30G 4-890-614-00 59048/094 4-890-622-00 Screw, cartridg 4-890-508-00 **1** Screw, pivot 00431/010 4-890-575-00 Retaining Ring 4-890-510-00 Lever, stylus for adjustment Stylus, ND-133G 3-705-801-00 Cover, protection; stylu 4-890-615-00 Spindle 41219/010 4-890-574-00 Washer, plastic 00431/002 4-890-511-00 Retaining Ring 6 4-890-573-00 4-890-612-00 Screw, pivot 4-890-509-00 Plate, stylus force 41219/005 -4-890-515-00 Washer X-4890-503-0 Bracket Ass'y, to 4-890-514-00 Clip, spring 4-890-572-00 Lever Unit, support X-4890-518-0 (3) Cam Ass'y, main 4-890-516-00 Pin, pivot 4-890-513-00 Plate, end 00431/024 4-890-626-00 Retaining Ring 4-890-569-00 Spring, interm 41219/005 4-890-515-00 4-890-605-00 Rest, tonearm; with clip 4-890-517-00 **B** Screw, pivot 4-890-611-00 Washer, locking 4-890-512-00 Dial, stylus force 4-890-571-00 Spring ton 30952/001 4-890-519-00 Screw, cover 4-890-610-00 Cap, friction 00687/002 4-890-607-00 Retaining Ring 4-890-609-00 Spring 4-890-576-00 Screw, transit 00432/007 4-890-530-00 X-4890-516-0 B Spares Ass'y, lifting pla with lifting spindle spri 4-890-576-00 Screw, transit 4-890-570-00 Lever, tension 4-890-518-00 Spring X-4890-504-0 Bias Compense 0 71824 — 4-890-568-00 Link, tension TO CO 00687/002 4-890-607-00 9 4-890-567-00 Clip, transit 4-890-520-00 Nut, tonearm weight adjusting 500 77275/001 X-4890-511-0 Base Ass'y, tu 940

(A)

01515/020 4-890-604-00 Screw, tonear

43855 4-890-567-00 Clip, transit

Note: O Items without part number and description are not available.

O All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head

72997 4-890-521-00 Pad, bearing

77273 4-890-522-00 **(b)** Lever Unit, cueind

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