

# Service Manual

ORDER NO. HAD 8605533C0  
A2

QUARTZ Direct Drive  
Automatic Turntable System

Turntable System

## SL-QD33



### Color

(S)..... Silver Type  
(K)..... Black Type

**Note:**  
Only models for U.S.A. and Canada are  
not provided with cartridge

**TM** is the standard mark for plug-in-connector system. Products  
carrying this mark are interchangeable and compatible with each other

## SPECIFICATIONS

### ■ TURNTABLE SECTION

**Type:** Quartz direct drive  
Automatic turntable  
Auto-start  
Auto-return  
Auto-stop  
Repeat play  
Manual play

**Drive method:** Direct drive

**Motor:** Brushless-DC motor

**Drive control method:** Quartz phase locked control

**Turntable platter:** Aluminum die-cast  
Diameter 31.2 cm (12-9/32")

**Turntable speeds:** 33-1/3 rpm and 45 rpm  
0.012% WRMS\*

**Wow and flutter:** 0.025% WRMS (JIS C5521)  
±0.035% Weighted zero to peak  
(IEC 98A weighted)

\* This rating refers to turntable assembly alone, excluding  
effects of record, cartridge or tonearm, but including  
platter. Measured by obtaining signal from built-in  
frequency generator of motor assembly

**Rumble:** -56 dB DIN-A  
(IEC 98A unweighted)  
-78 dB DIN-B  
(IEC 98A weighted)

### ■ TONEARM SECTION

**Type:** Static-balanced straight tonearm  
Plug-in-connector cartridge  
system

**Effective length:** 230 mm (9-1/16")

**Overhang:** 15 mm (19/32")

**Tracking error angle:** Within 2°32' at outer groove of  
30 cm (12") record  
Within 0°32' at inner groove of  
30 cm (12") record

**Effective mass:** 13.5 g (including cartridge)

**Stylus pressure**  
**adjustment range:** 1.25±0.25 g

**Applicable cartridge**  
**weight:** 6 g

### ■ CARTRIDGE SECTION (Except for U.S.A. and Canada)

**Type:** Moving magnet stereo cartridge

**Magnet circuit:** All laminated core

**Frequency response:** 10 Hz-40 kHz

# Technics

Matsushita Services Company  
50 Meadowland Parkway,  
Secaucus, New Jersey 07094

Panasonic Sales Company,  
Division of Matsushita Electric  
of Puerto Rico, Inc.  
Ave 65 De Indentaria, KM 9.7  
Victoria Industrial Park  
Carolina, Puerto Rico 00980

Panasonic Hawaii, Inc.  
91-238, Kaula St. Ewa Beach  
P.O. Box 774  
Honolulu, Hawaii 96808-0774

Matsushita Electric  
of Canada Limited  
5770 Ambler Drive, Mississauga,  
Ontario, L4W 2T3

Matsushita Electric Trading Co., Ltd.  
P.O. Box 288, Central Osaka Japan

**Output voltage:** 2.5 mV at 1 kHz, 5 cm/s zero to  
peak lateral velocity  
(7 mV at 1 kHz, 10 cm/s zero to  
peak 45° velocity (DIN 45 500))  
More than 22 dB at 1 kHz  
Within 1.8 dB at 1 kHz

**Channel separation:**

**Channel balance:**

**Recommended load**  
**impedance:** 47 kΩ-100 kΩ

**Compliance (dynamic):** 12×10<sup>-6</sup>cm/dyne at 100 Hz

**Stylus pressure range:** 1.25±0.25 g (12.5±2.5 mN)

**Weight:** 6 g (cartridge only)

**Replacement stylus:** EPS-30ES

For United Kingdom and  
Australia  
AC 240V, 50 Hz  
For continental Europe  
AC 220V, 50 Hz  
For others.  
AC 110-127/220-240V, 50/60 Hz

**Power consumption:** 8 W

**Dimensions (W×H×D):** 430×100×375 mm  
(16-15/16"×3-15/16"×14-3/4")  
When dust cover is open  
430×370×410 mm  
(16-15/16"×14-9/16"×16-1/8")  
4.5 kg (9.9 lb)

**Weight:**

Specifications are subject to change without notice for further  
improvement.  
Weight and dimensions shown are approximate

### ■ GENERAL

**Power supply:** For U.S.A. and Canada  
AC 120V, 60 Hz

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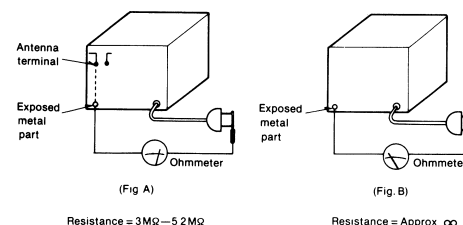
## ■ SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

- Before servicing, unplug the power cord to prevent an electric shock.
- When replacing parts, use only manufacturer's recommended components for safety.
- Check the condition of the power cord. Replace if wear or damage is evident.
- After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
- Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

### • INSULATION RESISTANCE TEST

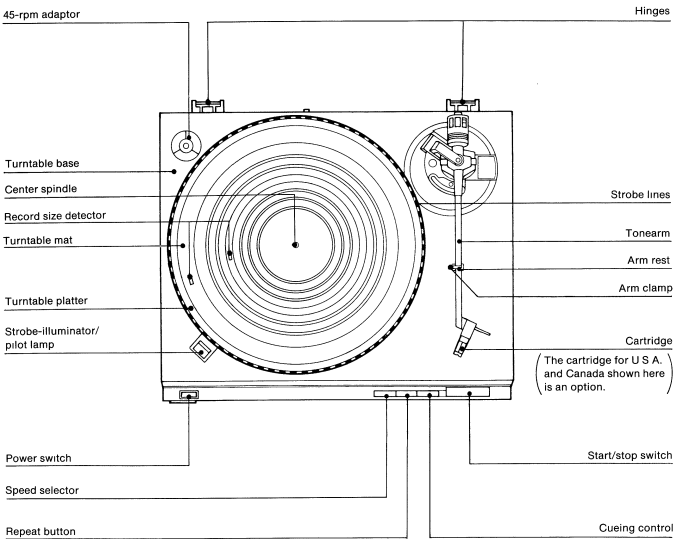
- Unplug the power cord and short the two prongs of the plug with a jumper wire.
- Turn on the power switch.
- Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads, antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.

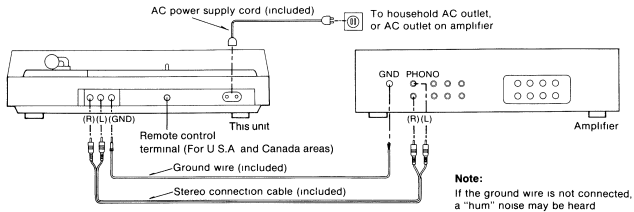


- If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer

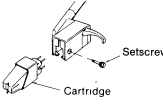
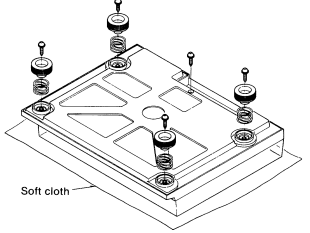
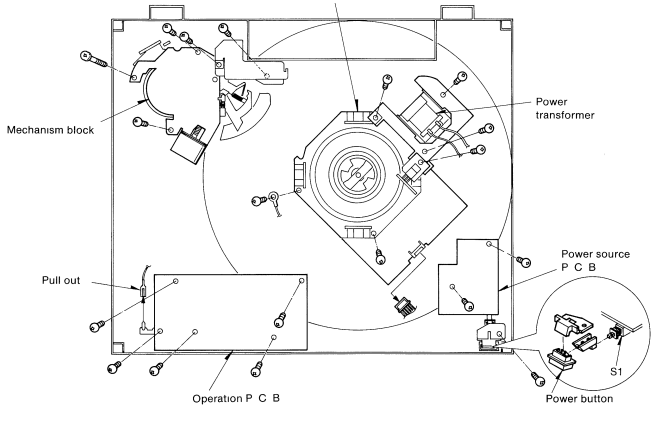
■ LOCATION OF CONTROLS



■ CONNECTIONS



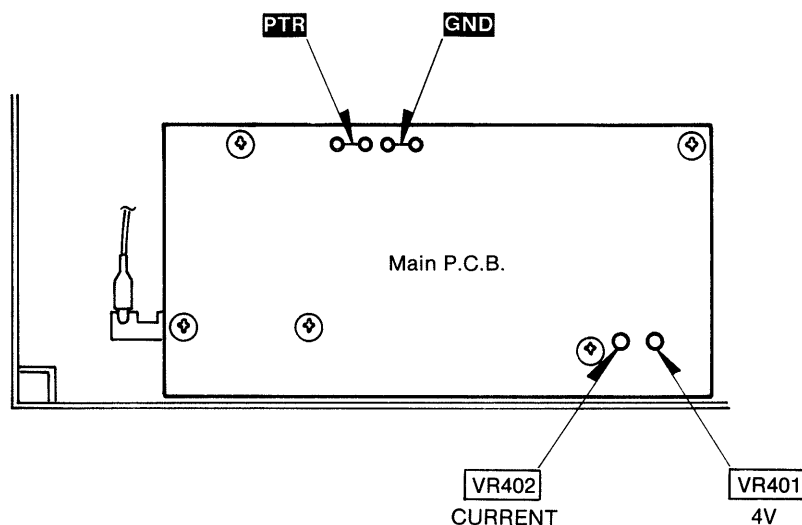
■ DISASSEMBLY INSTRUCTIONS

Ref. No 1	How to remove the cartridge	Ref. No 2	How to remove the bottom board
Procedure 1	<p><b>Note</b></p> <p>When servicing, remove the cartridge or stylus in order to protect the stylus tip of cartridge.</p> <ul style="list-style-type: none"><li>Remove the setscrew and pull out the cartridge, taking care that your hand does not touch the stylus tip.</li></ul>  <p>Cartridge</p> <p>Setscrew</p>	Procedure 2	<ol style="list-style-type: none"><li>Secure tonearm with arm clamp.</li><li>Remove the turntable platter.</li><li>Turn over the unit on a soft cloth.</li><li>Remove the 5 setscrews.</li></ol>  <p>Soft cloth</p>
Ref. No 3	How to remove the each block		
Procedure 2 + 3	<ul style="list-style-type: none"><li>Remove the setscrews of each block as shown in drawing.</li></ul>  <p>Turntable drive P C B</p> <p>Mechanism block</p> <p>Pull out</p> <p>Operation P C B</p> <p>Power transformer</p> <p>Power source P C B</p> <p>S1</p> <p>Power button</p>		

Ref. No 4	How to remove the tonearm	Ref. No 5	How to remove the motor
Procedure 3 ➤ 4	<div>1 Remove the mechanism block.</div> <div>2. Remove in the numerical order shown</div> <div><div><div>1. Unsolder the 5 lead wires.</div><div><div>Blue</div><div>Green</div><div>Red</div><div>White</div><div>Black</div></div><div>Output jack</div></div><div>3. Remove the stopper</div><div>2. Remove the index plate</div><div>4. Remove the setscrew.</div></div>	Procedure 3 ➤ 5	<div>• Remove the 3 setscrews.</div> <div><div><div>5. Remove the lead holder.</div><div>6. Remove the 2 setscrews.</div></div></div>
Ref. No 6	How to fit the mechanism board		
Procedure 6	<div>1. Secure tonearm with arm clamp.</div> <div>2. Fit in the numerical order.</div> <div><div><div>1. The index plate should be set in the position shown below.</div><div>2. Set in the direction of arrow.</div><div>4. Secure it with 3 setscrews.</div></div><div><div>Brake plate</div><div>Index plate</div></div></div>	<div>3. Turn the worm gear to shift the main gear to the position shown below. ( Set the center of the hole in the board to the position of main gear. )</div> <div><div><div>Worm gear</div><div>Main gear</div></div></div> <div><div>Note:</div><div>In this condition, tonearm is in the state of "cueing up", but it will be shifted to "cueing down" when power switch is turned "on" after assembly.</div><div>It can be installed in the initial state, but in that case the brake plate touches the main gear. Therefore, pull the brake plate when installing</div></div>	
<div>• Movable piece cutting</div> <div>When using the movable piece for this unit, cut off the part as shown by using nippers</div> <div><div><div>Cut off</div></div></div>			

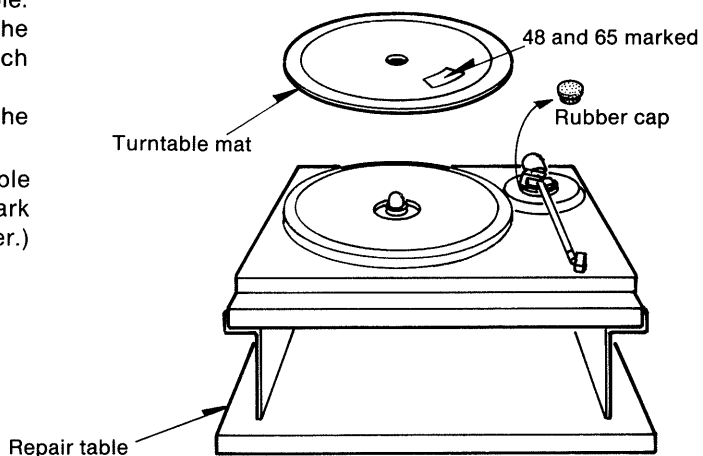
# MEASUREMENTS AND ADJUSTMENTS

## ADJUSTMENT POINTS



### STATE OF SET

1. Remove the bottom plate and put it on the repair table.
2. Make sure that the tonearm is free (cuing down) in the rest position. (If it is not free, turn on the power switch and wait until the tonearm is free.)
3. Set the stylus cover on the cartridge, and remove the rubber cap of arm base.
4. Turn over the turntable mat and put it on the turntable platter. (The turntable mat is provided with match mark at the position R65 mm and R48 mm from the center.)



### PROCEDURE BEFORE ADJUSTMENT

The microcomputer used in this unit has a function to select normal and adjustment modes. There are **Test 1** and **Test 2** for the adjustment mode. So, check the mode before making the adjustment.

#### How to select the adjustment mode

##### 1. Test mode 1

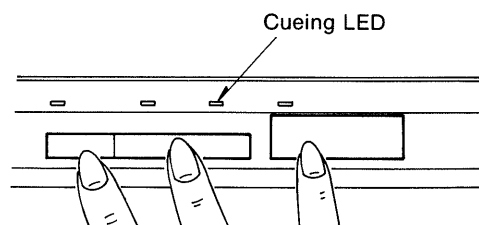
Before turning **on** the power switch, make sure that the tonearm is free in the rest position, and set all the 4 operation keys to **on** (pressing all the keys with fingers). Subsequently, turn **on** the power switch. (**In the test mode, the turntable will not rotate even when the tonearm is moved inwards.**)

##### 2. Test mode 2

Press the Stop key once in the state of Test mode 1.

##### 3. Normal mode

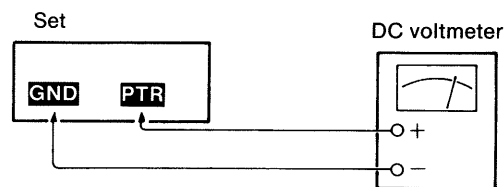
Press the Stop key once in the state of Test mode 2



## CURRENT ADJUSTMENT

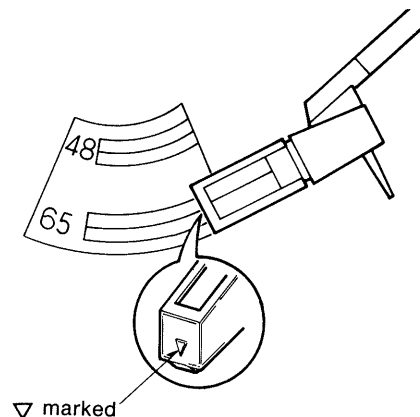
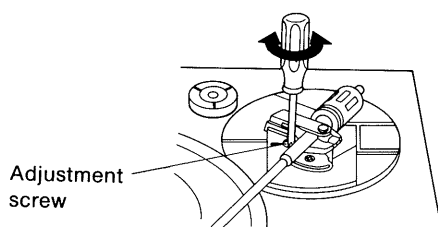
1. Set the microcomputer to **Test mode 1**.
2. Connect DC voltmeter to **PTR** (+) and **GND** (–) of P.C.B.
3. Move the tonearm to the position where the reading of DC voltmeter is **8V±0.005V**.
4. Adjust **VR402** so that cueing LED lights up.
5. After the LED lights up, be sure to turn off the power switch.

(Be sure to turn off the power switch before the next adjustment.)



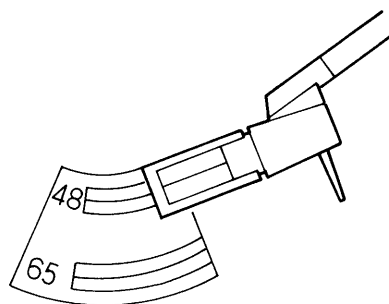
## 8V ADJUSTMENT

1. Set the microcomputer to **Test mode 1**.
2. Manually fix the stylus cover in the **65** position of turntable mat, matching the marks (▽).
3. Turn the **shutter plate adjusting screw** in the adjusting hole of the arm base so that the **cueing LED lights up**.



## 4V ADJUSTMENT

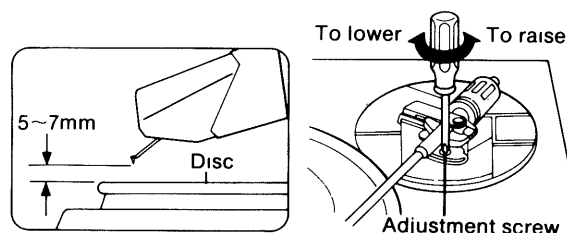
1. Press the Start/Stop key or Stop key and shift the mode to **Test 2** (In SL-QD33, Repeat LED lights up.)
2. Manually fix the stylus cover in the **48** position of turntable mat, matching the marks (▽).
3. Turn **VR401** so that the **cueing LED lights up**.
4. Return the tonearm to the rest position and press the Start/Stop or Stop key, then the mode is reset to the normal mode.



## ADJUSTMENT OF THE STYLUS-TO-DISC CLEARANCE

Make this adjustment if the cartridge is replaced, or at any other time an adjustment is necessary because of the length of the stylus being used. (This adjustment is usually unnecessary.)

1. Set the cueing control to "▽".
2. Move the tonearm to a position above the disc.
3. Adjust the stylus tip position.



## AUTOMATIC START POSITION

If the stylus does not land in the lead-in groove, adjust as follows.

1. Clamp the tonearm to the arm rest.
2. Remove the rubber cap.
3. Turn the screw with a screwdriver, clockwise or counterclockwise as necessary.

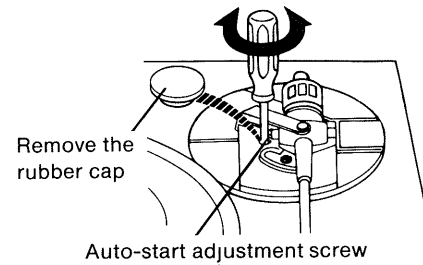
If the stylus tip sets down too far in the recorded groove,

—turn **counterclockwise**.

If the stylus tip sets down outside of the record,

—turn **clockwise**.

Adjust so the stylus tip lands 1—2 mm in from the edge of the record



## ■ TECHNICAL GUIDE

Unlike the conventional mechanism, the automatic operation mechanism of this unit has been improved in performance employing a new mechanism with microcomputer and motor for automatic operation and an optical end detection system.

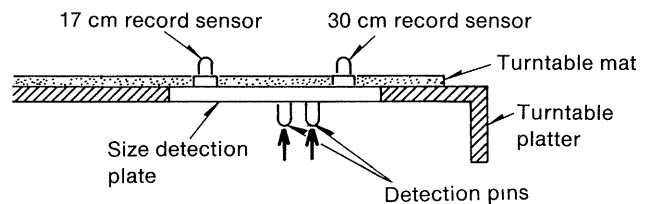
### Description of Mechanism

#### 1. Record size detection

The presence of record and its sizes 17 cm and 30 cm are detected by the size detection plate of the turntable platter and the index plate attached to the main body.

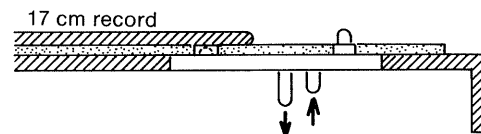
##### a) State of no record

Both of the 2 sensors are free and the detection pins are up.



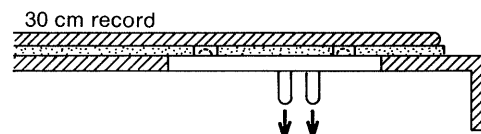
##### b) 17 cm record

The 17 cm record sensor is pressed by the record, and the inside detection pin is shifted down

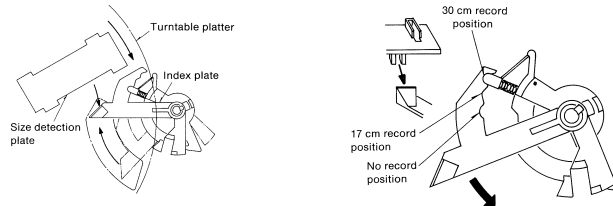


##### c) 30 cm record

Both of the 2 sensors are pressed, and the 2 detection pins are down.

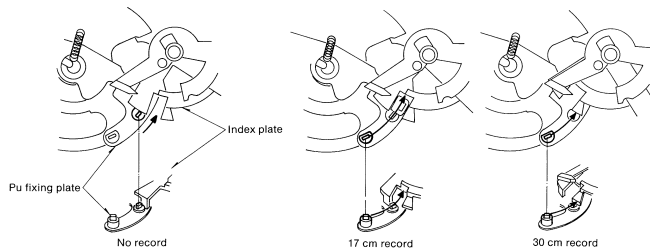


As the turntable platter starts rotating, the index plate is shifted from the initial position (broken line) to the solid line position by the arm mechanism. Since the detection pin of the turntable platter is as mentioned above, the detection pin does not touch the index plate. When 17 cm record is present, the inside detection pin touches the index plate thereby setting the index plate to the position of 17 cm record. When 30 cm record is present, both of the inside and outside detection pins come in touch with the index plate thereby setting the index plate to the position of 30 cm record.



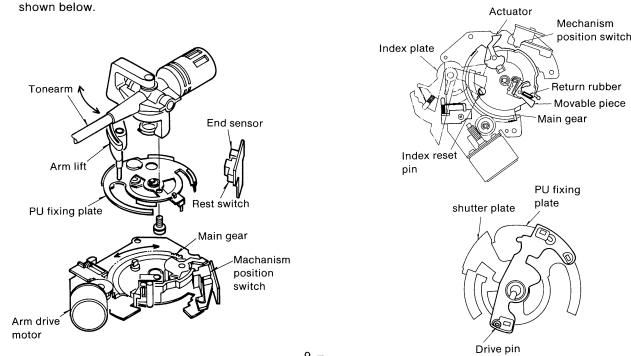
## 2. Drop position setting

When the index plate is set with the record size detected, the tonearm drop position at auto start is determined. The PU fixing plate moves in auto start but its movement is limited as the drop position setting pin of PU fixing plate touches the index plate to set the drop position. The position then set is the tonearm drop position.



## 3. Mechanism of tonearm operation

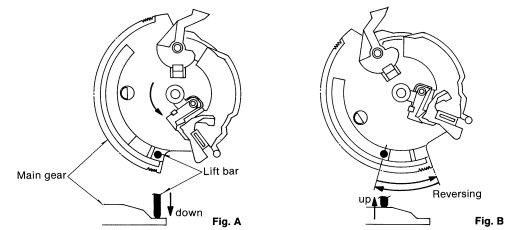
The main gear is rotated by DC motor to perform cueing up/down, tonearm lead-in and return operations. Also, UP switch and DOWN switch are provided for the detection of mechanism operating position, and Rest switch, for the detection of tonearm rest position. The arm driving mechanism structure and the names of component parts are shown below.



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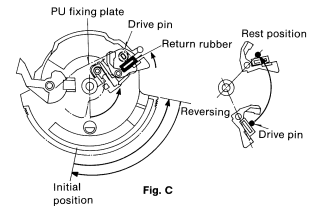
### a) Cueing operation

The lift rod is initially in the position of main gear (Fig. A) when cueing mode is "down". With the cueing key pressed, the motor rotates according to the command from the microcomputer to turn the main gear to the position of Fig. B. The main gear rotation causes the cueing mode to be shifted from "down" to "up". When the cueing key is pressed again, the motor reversely rotates according to the reversing command from the microcomputer, then the main gear returns to the initial position of Fig. A.



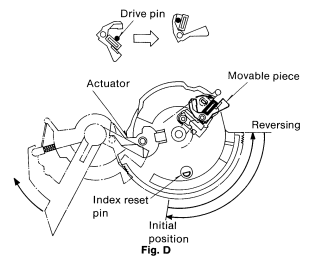
### b) Stop operation

During play mode, the main gear is in the initial position (Fig. A). With the stop key pressed, the motor rotates according to the command from the microcomputer to turn the main gear to the position of Fig. C. The rotation of main gear causes the cueing mode to be shifted to "up", and subsequently the return rubber pushes the drive pin of PU fixing plate to move the tonearm to the rest position. When the above operations have been completed, the motor reversely rotates according to the reversing command from the microcomputer, and the main gear returns to the initial position of Fig. A.



### c) Auto start operation

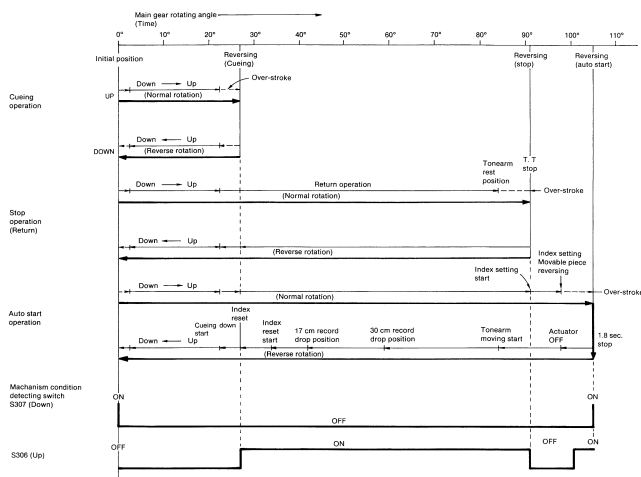
When the start key is pressed, the motor rotates according to the command from the microcomputer to turn the main gear to the position of Fig. D. The rotation of main gear causes the cueing mode to be shifted to "up", then the mechanism is set so that the pin of movable piece touches the mechanism board to catch the drive pin of PU fixing plate located in the rest position. Also, it is set so that the record size can be detected by the index plate with the actuator of main gear. With the above operations completed, the motor reversely rotates according to the reversing command from the microcomputer to return the main gear to the initial position of Fig. A. In that case, the PU fixing plate moves along with main gear because the drive pin is set on the movable piece, while tonearm is moved inside, but with the record size detected, the drive pin is released from the movable piece at the record drop position since the index plate is set in place.



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#### 4. Auto mechanism timing chart

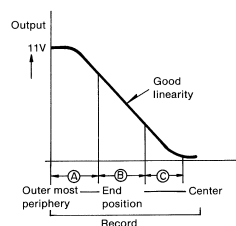
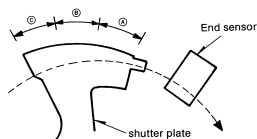


To detect the state of mechanism operation, a detection switch which turns ON/OFF with the rotation of main gear is installed as shown. With this switch operated, the state of mechanism is input to the microcomputer to give the normal or reverse rotation command to the motor.

#### Description of Circuit

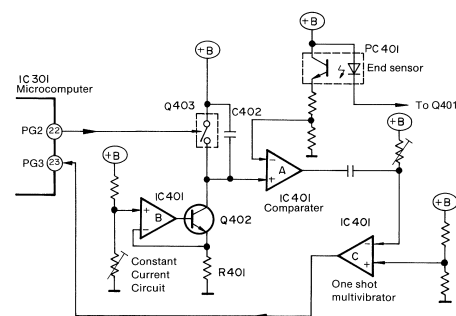
##### 1. End detection sensor

It detects the output voltage change when the shutter plate installed under the tonearm passes through the end detection sensor. The shutter plate is not shaped in circular arc but in volution so that the output voltage changes linearly. The good linearity part of the characteristic is used as the range of end detection. (The actual range of detection is R65-R48 mm from the center of the record.)

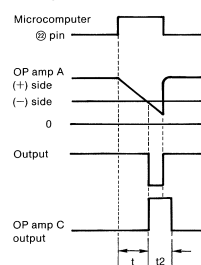


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#### 2. End detection circuit



##### Timing chart



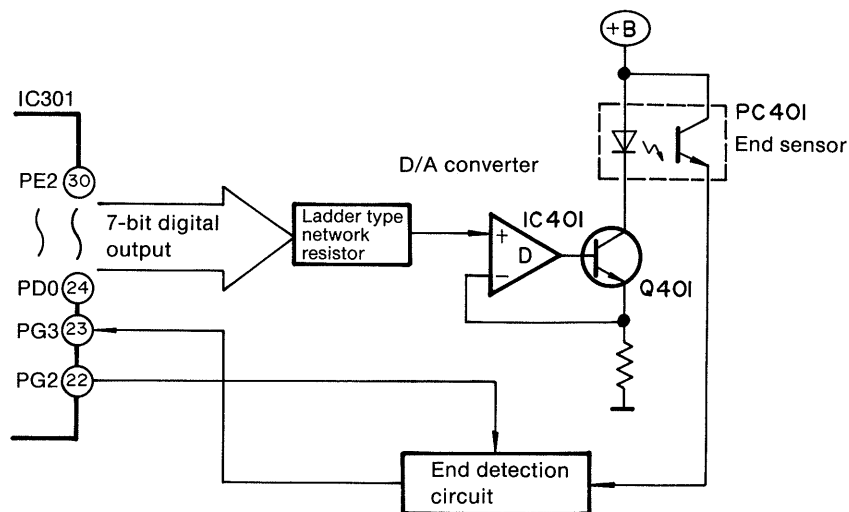
Q403 repeats to turn on/off with the strobe output from pin ② (PG2) of microcomputer (IC301). When the strobe of pin ② is at "L", Q403 turns on, therefore (+B) is applied to the (+) side of OP amp A (IC401). When the strobe of pin ② changes to "H", Q403 turns off and the voltage on the (+) side of OP amp A is lowered but the constant current circuit consisting of OP amp B and Q402 keeps the current flowing to R401 constant so that the voltage charged in C402 is discharged causing the (+) side voltage of OP amp A to gradually decrease. The voltage and the output of end detection sensor (PC401) are compared at OP amp A. The output of OP amp A goes "L" when the (+) side voltage is lower than the (-) side voltage. The output of OP amp A is input to the (-) side of one-shot multi-vibrator consisting of OP amp C. The output of OP amp C goes "H" at the rise of (-) side input. Using this circuit, the microcomputer reads the time (t) required until rise of the pulse input to pin ③ with the rise of the strobe of pin ②. Duty (t2) of output pulse of OP amp C is read by the microcomputer during the initial detection, which is the detection sensitivity. The wider the duty, the higher the sensitivity, and vice versa. The detection sensor is set so that the output changes in the range of end detection. Therefore, t is shorter when the output voltage is higher, and it is longer when the voltage is lower. Thus, the microcomputer is able to detect the tonearm position. Also, the amount of change in t can be found by reading the amount of t several times with the rotation of turntable platter, and therefore the tonearm advancing speed can be judged from the amount of change in t. In this way, the microcomputer detects the end of record to control the arm drive mechanism.

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### 3. Automatic adjustment of end detection sensor output

In order to stabilize the operation point of end detection sensor after power ON, the output is automatically adjusted by the microcomputer so that the detection sensor output voltage becomes 11V while the tonearm is in the rest position and is returned to the rest position.



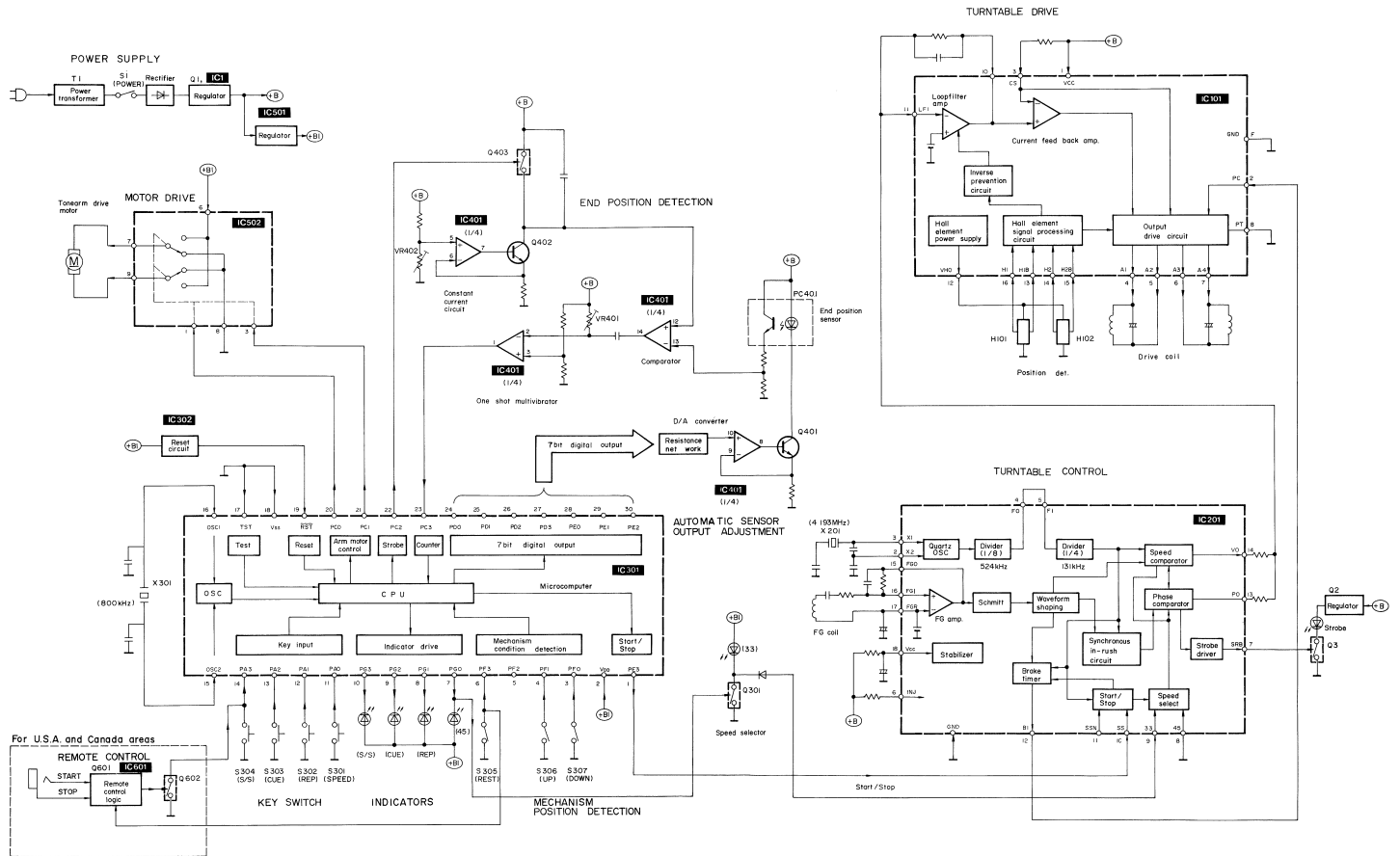
When the tonearm is in the rest position, 7-bit pulses are output from pins ②④~③① of microcomputer, and the digital output is changed to analog output by OP amp D and D/A converter consisting of ladder type network resistor, thereby controlling the current flowing to LED of the detection sensor. In that case, strobe is output from pin ②② (PG2) of microcomputer, and the sensor output is detected by the end detection circuit mentioned in the previous section. The microcomputer outputs 7-bit pulses until the detected output becomes 11V thereby automatically adjusting the output of detection sensor.

## ■ DESCRIPTION OF IC301 (SVILC6526CPA) TERMINALS

Pin No.	Mark	Description
1	PE3	Turntable start/stop command output terminal ("L" at start, "H" at stop.)
2	VDD	Power supply terminal (+5V)
3	PF0	Mechanism condition detecting switch (Down SW) input terminal. (Mechanism condition is detected in up switch combination.)
4	PF1	Mechanism condition detecting switch (Up SW) input terminal. (Mechanism condition is detected in down switch combination.)
5	PF2	Full-auto mechanism and semi-auto mechanism mode changeover terminal. [Open...full-auto (SL-QD33), Ground...semi-auto (SL-QD22).]
6	PF3	Tonearm rest position detecting switch input terminal. ("L" with tonearm is rest position.)
7	PG0	45 LED lighting output and speed changeover command output terminal (LED lights up at "L", 45 r.p.m.... "L", 33 r.p.m.... "H".)
8	PG1	REPEAT LED lighting output terminal. (LED lights up at "L"). . . full-auto (SL-QD33)
9	PG2	CUEING LED lighting output terminal. (LED lights up at "L".)
10	PG3	START/STOP LED lighting output terminal. (LED lights up at "L".)
11	PA0	Speed select key input terminal. (Used in full-auto mode.) 33 key input terminal. (Used in semi-auto mode.)
12	PA1	Repeat key input terminal. (Used in full-auto mode.) 45 key input terminal. (Used in semi-auto mode.)
13	PA2	Cueing key input terminal.
14	PA3	Start/stop key input terminal. (Used in full-auto mode.) Stop key input terminal. (Used in semi-auto mode.)

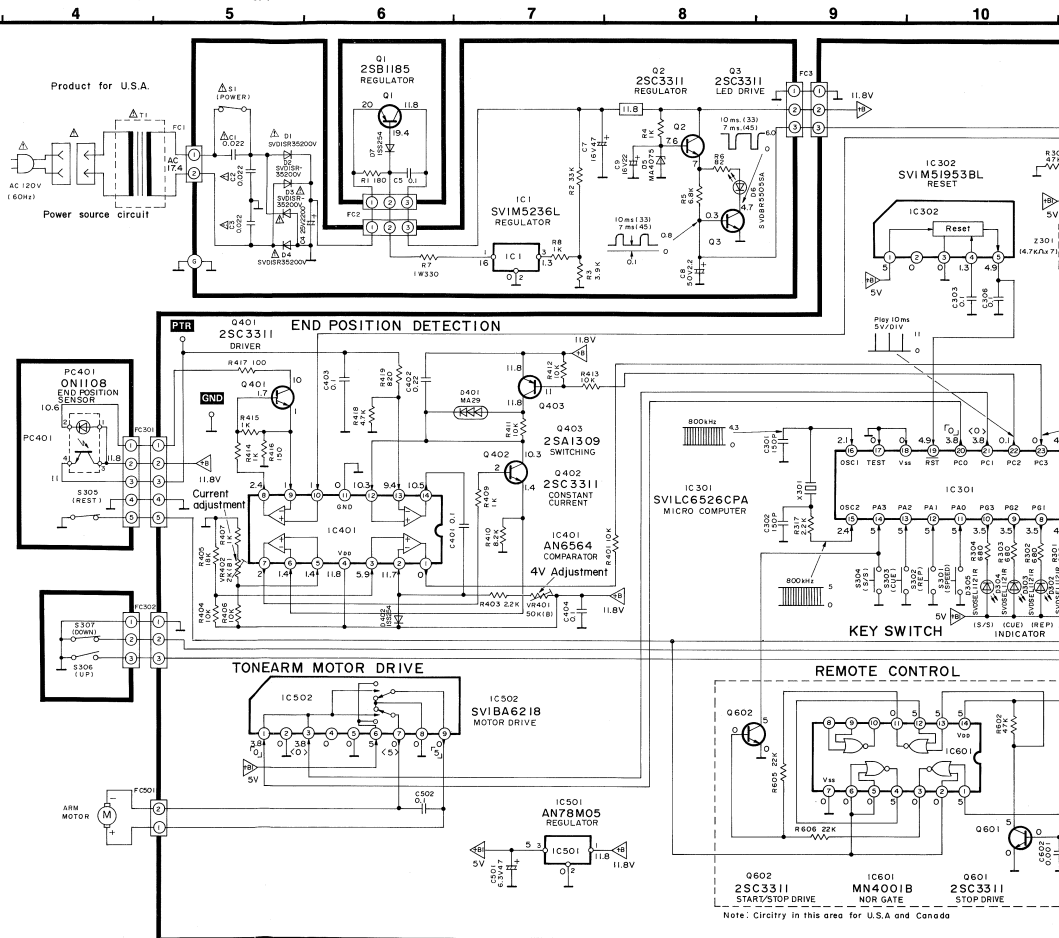
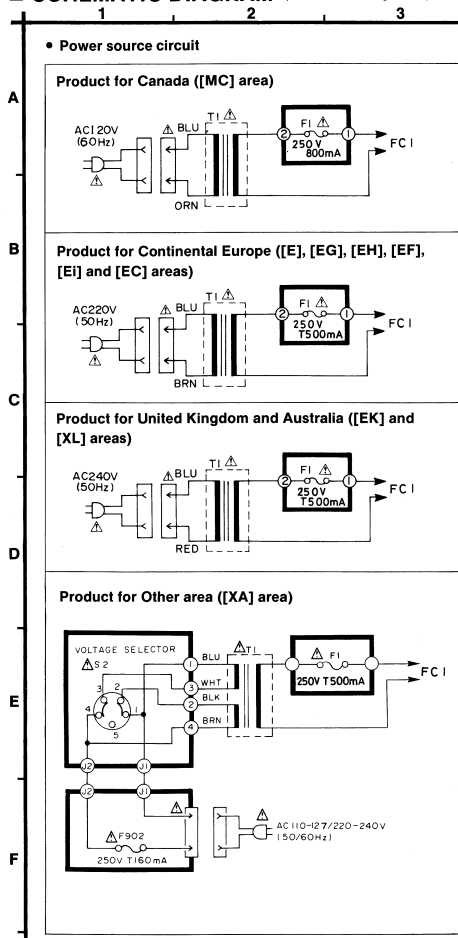
Pin No.	Mark	Description																			
15	OSC2	Clock oscillation input terminal. (800 kHz)																			
16	OSC1	Clock oscillation input terminal. (800 kHz)																			
17	TEST	Test terminal (Not used, connected to ground.)																			
18	VSS	Ground terminal																			
19	REST	Reset terminal (Microcomputer is reset at “L”.)																			
20	PG0	Tonearm motor drive control output terminal. <table><tr><th rowspan="2">Part</th><th colspan="4">Motor conditions</th></tr><tr><th>Braked</th><th>Free</th><th>Normal</th><th>Reverse</th></tr><tr><td>PG0</td><td>H</td><td>L</td><td>L</td><td>H</td></tr><tr><td>PG1</td><td>H</td><td>L</td><td>H</td><td>L</td></tr></table>	Part	Motor conditions				Braked	Free	Normal	Reverse	PG0	H	L	L	H	PG1	H	L	H	L
Part	Motor conditions																				
	Braked		Free	Normal	Reverse																
PG0	H	L	L	H																	
PG1	H	L	H	L																	
21	PG1																				
22	PG2	Strobe output terminal. (Strobe is output during detection sensor automatic output adjustment and end detection.)																			
23	PG3	Detection sensor automatic output adjustment and end detection input terminal. (It reads the time from rise of strobe of PG2 until rise of pulse input during automatic adjustment and end detection.)																			
24	PD0	LSB } 7-bit digital output terminal.  { 7-bit pulses are output to LED of detection sensor until the output of detection sensor becomes 11V with the input of PG3.....Automatic output adjustment of detection sensor. MSB }																			
25	PD1																				
26	PD2																				
27	PD3																				
28	PE0																				
29	PE1																				
30	PE2																				

## ■ BLOCK DIAGRAM





# ■ SCHEMATIC DIAGRAM (This schematic diagram may be modified at any time with development of new technology.)





## ■ REPLACEMENT PARTS LIST

### Notes:

- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
- Important safety notice:  
Components identified by  $\Delta$  mark have special characteristics important for safety.  
When replacing any of these components, use only manufacturer's specified parts.
- $\odot$ -marked parts are used for black type only, while  $\bigcirc$ -marked parts are for silver type only.
- Parts other than  $\odot$ - and  $\bigcirc$ -marked are used for both black and silver type.

- Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
- The "③" mark is service standard parts and may differ from production parts.
- The parenthesized numbers in the column of description stand for the quantity per set.

Unless otherwise specified,

All resistors are in OHMS ( $\Omega$ ) K=1000 $\Omega$ , M=1000k $\Omega$

All capacitors are in MICROFARADS ( $\mu$ F), P=10<sup>-9</sup> $\mu$ F.

Ref. No.	Part No.	Description
<b>INTEGRATED CIRCUITS</b>		
IC1	SVMS26L	IC
IC101	AN6938	IC
IC201	AN6938	IC
IC201	SVLC0638CPA	IC
IC302	SVMS193BL	IC
IC401	AN6938	IC
IC501	AN79405	IC
IC502	SVBA2818	IC
IC601	MN4001B	IC
[M.MC]	only	
<b>TRANSISTORS</b>		
Q1	2SB1185DEF	Transistor
Q2, 3	2SC3311	Transistor
Q301	2SC3311	Transistor
Q401, 402	2SC3311	Transistor
Q403	2SA1309	Transistor
Q601, 602	2SC3311	Transistor
[M.MC]	only	
<b>DIODES</b>		
D1-4	$\Delta$ SVD19R3620V	Rectifier
D5	MA4075	Zener Diode
D6	SVD8R505SA	LED
D7	15D254	Diode

### • Resistors and Capacitors

#### Numbering System of Resistor

Example

Type	S2	T	J	101
ERD (Carbon)	Wattage (1/4W)	Shape	Tolerance ( $\pm 5\%$ )	Value (100 $\Omega$ )
ERG (Metal Oxide)	1	AN	J	2R2
ERD (Carbon)	2	FC	G	101
Type	Wattage (1/4W)	Shape	Tolerance ( $\pm 2\%$ )	Value (2.2 $\Omega$ )
(Carbon)	Peculiarity			(100 $\Omega$ )

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
<b>RESISTORS</b>					
R1	ERDS2TJ181	180	R205	ERDS2TJ223	22K
R2	ERDS2TJ333	33K	R207	ERDS2TJ102	1K
R3	ERDS2TJ392	3.9K	R209	ERDS2TJ680	68
R4	ERDS2TJ102	1K	R301, 302	ERDS2TJ681	680
R5	ERDS2TJ882	8.8K	R303, 304	ERDS2TJ681	680
R6	ERDS2TJ820	82	R305	ERDS2TJ822	8.2K
R7	ERSA1N231	330	R306, 307	ERDS2TJ104	100K
R8	ERDS2TJ102	1K	R309	ERDS2TJ681	680
R103	ERDS2TJ104	100K	R309, 310	ERDS2TJ473	47K
R104	ERX1AN2J07	2.7	R311, 312	ERDS2TJ473	47K
			R313, 314	ERDS2TJ473	47K
			R315, 316	ERDS2TJ473	47K
R105	ERDS2TJ270	27	R317	ERDS2TJ222	2.2K
R201	ERDS2TJ273	27K	R401	ERDS2TJ103	10K
R202	ERDS2TJ690	68	R403	ERDS2TJ222	2.2K
R203	ERDS2TJ690	68			
R204	ERDS2TJ151	150	R404	ERDS2TJ103	10K
			R405	ERDS2TJ193	19K

#### Numbering System of Capacitor

Example

ECE	A or B	QJ	U	470	
Type (Electrolytic)	Shape	Voltage (6.3V)	Peculiarity use	Value (47 $\mu$ F)	
ECQ	G	1	223	K	Z
Type (Plastic Film)	Peculiarity	Voltage (100V DC)	Value (0.022 $\mu$ F)	Tolerance ( $\pm 10\%$ )	Shape
ECK	R	1H	473	Z	V
Type (Ceramic)	Shape	Voltage (50V DC)	Value (0.047 $\mu$ F)	Tolerance $\pm 5\%$	Peculiarity

Type	ECE Type	Others	Tolerance
ECE : Electrolytic	0J : 6.3V	1C : 16V DC	K : $\pm 10\%$
ECC : Plastic Film	1A : 10V	1E : 25V DC	Z : $\pm 5\%$
	1C : 16V	05 : 50V DC	
	1E : 25V	1H : 50V DC	
	1H : 50V	1 : 100V DC	
	1J : 63V		

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R406	ERDS2TJ103	10K	R417	ERDS2TJ101	100
R407	ERDS2TJ102	1K	R418	ERDS2TJ821	820
R409	ERDS2TJ102	1K	R419	ERDS2TJ821	820
R410	ERDS2TJ822	8.2K	R601, 602	ERDS2TJ473	47K
R411	ERDS2TJ103	10K	R603, 604	ERDS2TJ333	33K
R412, 413	ERDS2TJ103	10K	R605, 606	ERDS2TJ223	22K
R414, 415	ERDS2TJ102	1K	R607	ERDS2TJ102	1K
R416	ERDS2TJ151	150			

Ref. No.	Part No.	Value
<b>CAPACITORS</b>		
C1	ECOD1220KZ	0.022
C2, 3	$\Delta$ ECKR1H252ZF	0.022
C4	ECBE1H222	2200
C5	ECFR1H1042FM	0.1
C7	ECBA10J470	47
C8	ECBA1H2R2	2.2
C9	ECBA10J220	22

Ref. No.	Part No.	Value
C101	ECBA10J330	33
C102	ECBA50ZR22	0.22
C103	ECOV80Z4J2	0.27
C105, 106	ECBA1AN4705	47

Ref. No.	Part No.	Value
C107	ECBA1H010	1
C201	ECBAJ470	47
C202	ECBA50ZR22	0.22
C203	ECGM1H83KZ	0.088

Ref. No.	Part No.	Value
C204	ECDD1H121K	120P
C205	ECDDH330JC	33P
C206	ECDDH1912K	120P
C207	ECBAJ470	47
C208	ECBA1AU221	220
C301, 302	ECR1H151K	150P

Ref. No.	Part No.	Value
C303	ECOG1H04KZT	0.1
C304, 305	ECPR1E104ZFM	0.001

Ref. No.	Part No.	Description
<b>CABINET AND CHASSIS PARTS</b>		
1	SFADZ19R01E	Dust Cover (1)
1-1	SFGZD04N01	Rubber Cushion (2)
2	SHDB5	Turntable Mat (1)
3	SHRB15E	Base (1)
4	SFTED09N01	Disc Size Sensor (1)
5	SFTM027D1E	Turntable Platter (1)
6	SFTM034N01	Magnet (1)
7	SFMZ063MS3A	Cover, Stator Coil (1)
		Stator Flame Assy (1)

Ref. No.	Part No.	Description
8 (XA)	SFGCO55X01	Cushion Rubber (2)
8 (Other)	SFGCO55N02	Cushion Rubber (2)
9	SFGZCO5N03	Cushion Rubber (1)
10	SFUPCO5N02	Shield Plate (1)

Ref. No.	Part No.	Description
11	$\bigcirc$ SKMB36-05	Plate (1)
12	$\bigcirc$ SKMB36-0K	Plate (1)
13	$\bigcirc$ SBCB100-05	Button (1)
14	$\bigcirc$ SBCB100-0C	Button (1)

Ref. No.	Part No.	Description
15	SUW59	Lever, Button (1)
16	SHRB40	Bracket (1)
17	SFUMB02N07	Stroke Cover (1)
18	SFUMB02N08	Holder (1)

Ref. No.	Part No.	Description
19	SHRB41	Holder (1)
20	SKUB3-1	Bottom Cover (1)
21	SFGCO3DN01	Spring, Insulator (4)
22	SKLB2	Insulator (4)

Ref. No.	Part No.	Description
23	SFGK170-F01	Rubber Cap (2)
24	SMC82	Shield Plate (2)
25	SFUDJ02N03	Terminal Plate (1)
26	$\bigcirc$ SKMLD033-KM	Cabinet (1)
27 (M)	SGT852	Name Plate (1)
27 (MC)	SGT853	Name Plate (1)
27 (E.C)	SGT854	Name Plate (1)
27 (E.C)	SGT855	Name Plate (1)
27 (E.K)	SGT857	Name Plate (1)
27 (XA)	SGT867	Name Plate (1)
27 (XL)	SGT898	Name Plate (1)
27 (Other)	SGT856	Name Plate (1)

Ref. No.	Part No.	Description
28	SGXB230	Plate (1)
29	$\bigcirc$ SKMB55-05	Cover (1)
30	$\bigcirc$ SKMB55-0K	Cover (1)
31	$\bigcirc$ SKMB55-0K	Cover (1)
32	$\bigcirc$ SKMB55-0K	Cover (1)
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96	$\bigcirc$ SKMB55-0K	Cover (1)
97	$\bigcirc$ SKMB55-0K	Cover (1)
98	$\bigcirc$ SKMB55-0K	Cover (1)
99	$\bigcirc$ SKMB55-0K	Cover (1)
100	$\bigcirc$ SKMB55-0K	Cover (1)

Ref. No.	Part No.	Value
C101	ECBA10J330	33
C102	ECBA50ZR22	0.22
C103	ECOV80Z4J2	0.27
C105, 106	ECBA1AN4705	47

Ref. No.	Part No.	Value
C107	ECBA1H010	1
C201	ECBAJ470	47
C202	ECBA50ZR22	0.22
C203	ECGM1H83KZ	0.088

Ref. No.	Part No.	Value
C204	ECDD1H121K	120P
C205	ECDDH330JC	33P
C206	ECDDH1912K	120P
C207	ECBAJ470	47
C208	ECBA1AU221	220
C301, 302	ECR1H151K	150P

Ref. No.	Part No.	Value
C303	ECOG1H04KZT	0.1
C304, 305	ECPR1E104ZFM	0.001

Ref. No.	Part No.	Description
30	$\bigcirc$ SKMB35-05	Cover (1)
30	$\bigcirc$ SKMB35-0K	Cover (1)
31	$\bigcirc$ SKMB35-05	Cover (1)
32	$\bigcirc$ SKMB35-0K	Cover (1)
33	$\bigcirc$ SKMB35-0K	Cover (1)
34	$\bigcirc$ SKMB35-0K	Cover (1)
35	$\bigcirc$ SKMB35-0K	Cover (1)
36	$\bigcirc$ SKMB35-0K	Cover (1)
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71	$\bigcirc$ SKMB35-0K	Cover (1)
72	$\bigcirc$ SKMB35-0K	Cover (1)
73	$\bigcirc$ SKMB35-0K	Cover (1)
74	$\bigcirc$ SKMB35-0K	Cover (1)



Part No.	Value
ECFR1E104ZFM	0.1
ECEADJ470	47
ECQ01H104K2T	0.1
ECQ01H104K2W	0.22
ECFR1E104ZFM	0.1
ECEADJ470	47
ECFR1E104ZFM	0.1
ECR1H102ZF	0.001

Description	
Washer, #3	(2)
Screw, #3	(1)
Washer, #3	(2)
Screw, #2.8x5	(3)
Screw, #3x35	(1)
Screw, #3x8	(2)
Screw, #3x8	(5)
Screw	(2)

Instruction Book	(1)
Instruction Book	(1)
Instruction Book	(1)
Instruction Book	(1)
Instruction Book	(1)
Instruction Book	(1)

AC Cord	(1)
AC Cord	(1)
AC Cord	(1)
AC Cord	(1)
AC Cord	(1)

Output Cord	(1)
Ground Wire	(1)
45 Adaptor	(1)
Adaptor	(1)
Remote Control Cord	(1)

Carton Box	(1)
Carton Box	(1)
Carton Box	(1)
Carton Box	(1)
Carton Box	(1)
Carton Box	(1)
Carton Box	(1)

Pad, Left	(1)
Pad, Right	(1)
Pad, Tonearm Weight	(1)
Clamper, Tonearm	(1)
Clamper, Turntable	(2)
Polyethylene Bag, Unit	(1)
Polyethylene Bag, Dust Cover	(1)
Polyethylene Bag, Turntable Mat	(1)
Pad, Turntable Mat	(1)

## EXPLODED VIEW

SL-QD33

