

Service Manual

Turntable System

SL-L20

DC Servo Automatic Turntable System

Color

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



is the standard mark for plug-in-connector type. Products carrying this mark are interchangeable and adaptable among each other.

Color	Areas
(S) (K)	[E] Switzerland and Scandinavia.
(S) (K)	[EK] United Kingdom.
(S) (K)	[XL] Australia.
(S) (K)	[EG] ... F.R. Germany.
(S) (K)	[EB] Belgium.
(S) (K)	[EH] Holland.
(S) (K)	[EF] France.
(S) (K)	[Ei] Italy.
(S) (K)	[XA] Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
(S) (K)	[XM] ... Central South America.
(S) (K)	[PA] Far East PX.
(S) (K)	[PE] European Military.
(S) (K)	[PC] European Audio Club.

SPECIFICATIONS

■ Turntable section

Type:	Belt drive Automatic turntable
Features:	Auto start, Auto return, Forward search play, Backward search play, Repeat play.
Drive method:	Belt drive
Motor:	DC motor
Turntable platter:	Aluminum die-cast Diameter 30 cm
Turntable speeds:	33-1/3 rpm and 45 rpm
Wow and flutter:	0.045% WRMS (JIS C5521) ±0.06% peak (IEC 98A Weighted)
Rumble:	-70 dB (IEC 98A Weighted)

■ Tonearm section

Type:	Linear tracking tonearm Plug-in-connector type
Effective length:	10.5 cm

Tracking error angle:	Within ±0.1°
Tonearm drive motor:	DC motor
Stylus pressure:	1.25 g (fixed)

■ Cartridge section

Model no.:	EPC-P30S
Type:	Moving magnet stereo cartridge Plug-in-connector type
Magnetic circuit:	All-laminated core
Frequency response:	10 Hz ~ 35 kHz
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])
Channel separation:	22 dB at 1 kHz
Channel balance:	Within 2 dB at 1 kHz
Recommended load impedance:	47 kΩ ~ 100 kΩ
Compliance (dynamic):	12×10 ⁻⁶ 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-30CS

Technics

Matsushita Electric Trading Co., Ltd.

P.O. Box 288, Central Osaka Japan

**Panasonic Tokyo Office
Matsushita Electric Trading Co., Ltd.**

6th Floor, World Trade Center Bldg.,
No. 4-1, Hamamatsu-cho 2-Chome, Minato-ku,
Tokyo 105, Japan

■ General

Power supply: For United Kingdom and Australia: AC 240 V, 50 Hz
 For continental Europe: AC 220 V, 50 Hz
 For others: ~110-127/220-240 V, 50 or 60 Hz

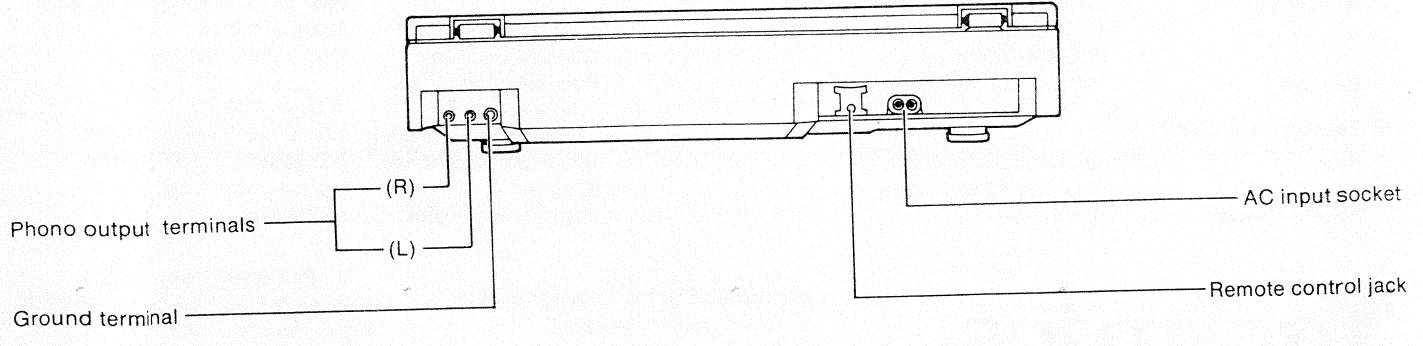
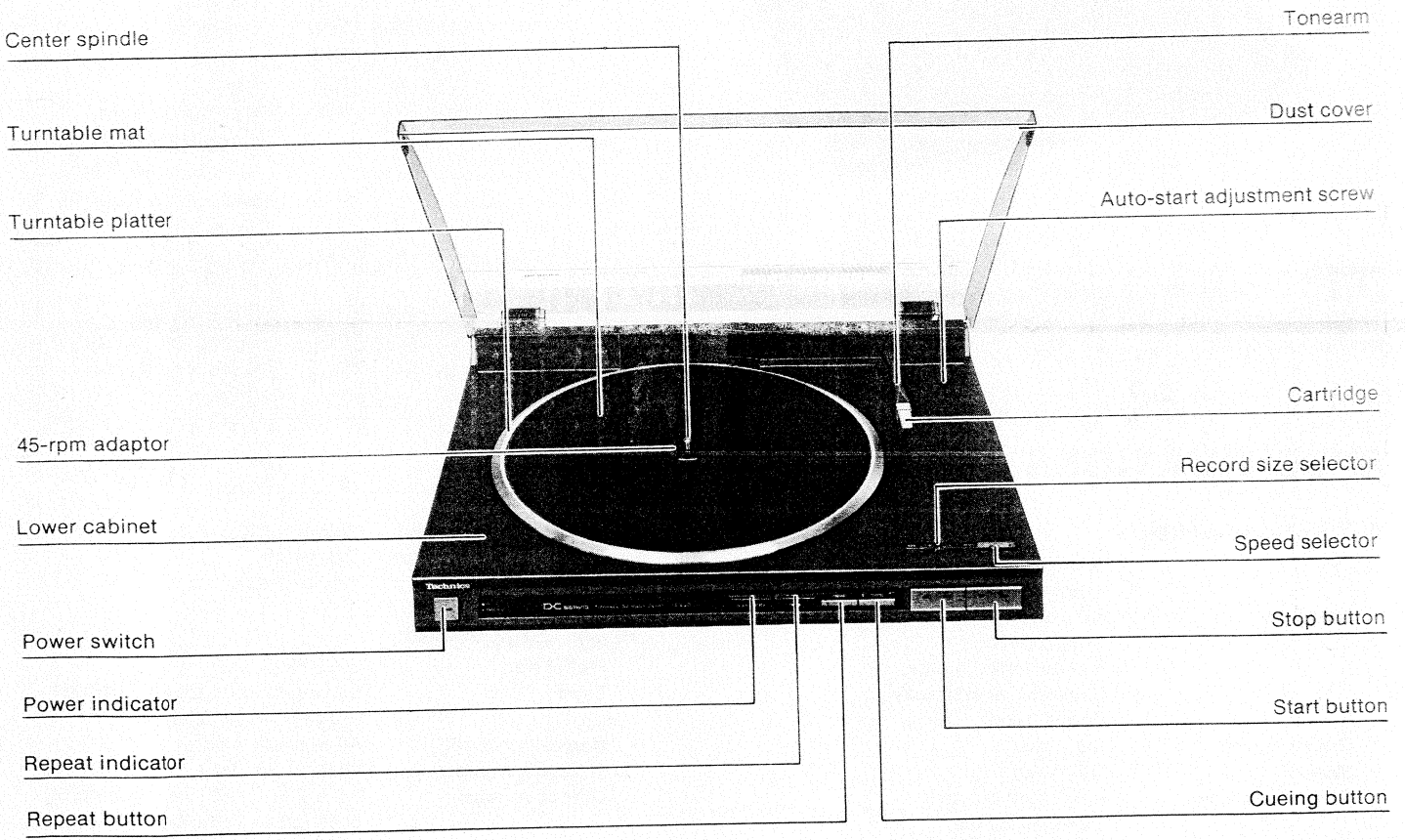
Power consumption: 8 W
Dimensions: 43 × 9.6 × 35.1 cm
 (W × H × D): (Maximum height when the dust cover is open: 35.8 cm)
Weight: 3.7 kg

Specifications are subject to change without notice for further improvement.

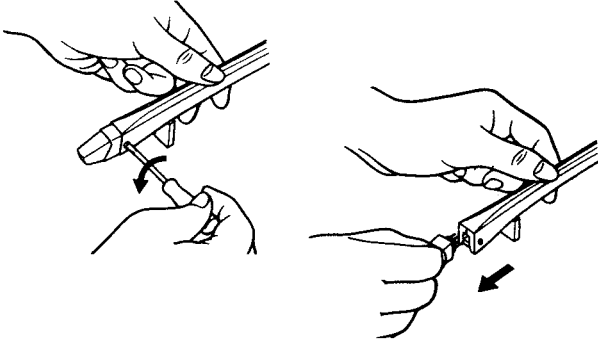
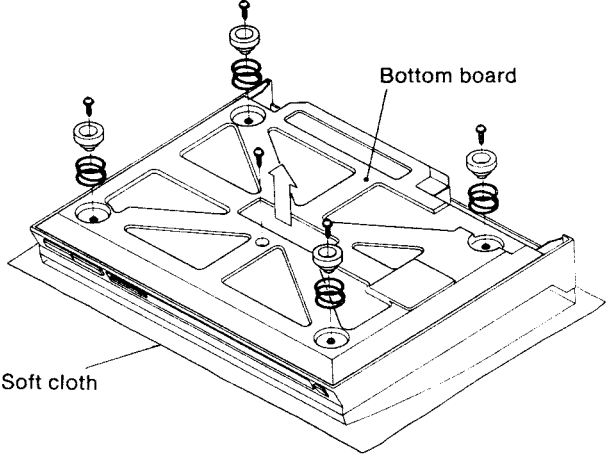
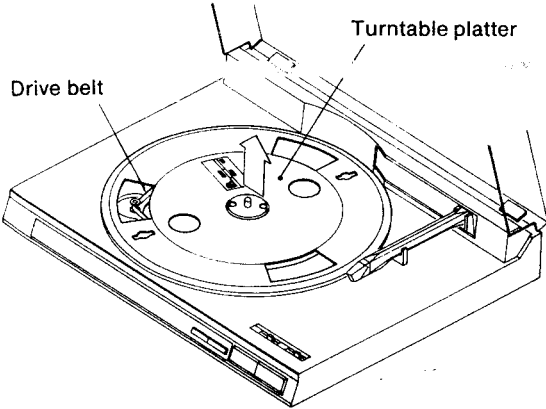
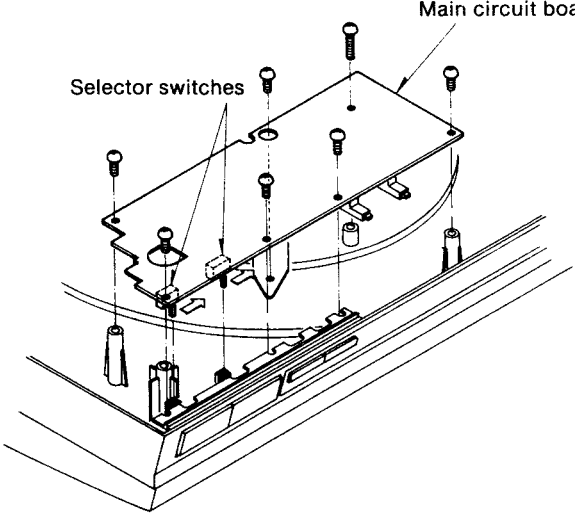
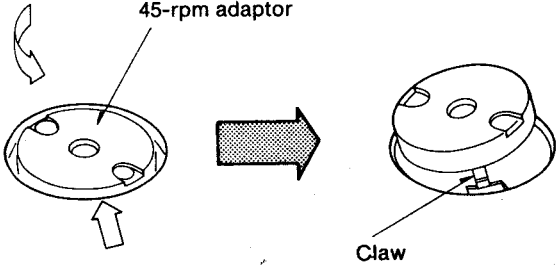
■ CONTENTS

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■ LOCATION OF CONTROLS



DISASSEMBLY INSTRUCTIONS

Ref. No 1	How to remove the cartridge	Ref. No 3	How to remove the bottom board
Procedure 1	<ol style="list-style-type: none"> 1. Open the dust cover. 2. Remove the setscrew and pull out the cartridge. 	Procedure 2 → 3	<ol style="list-style-type: none"> 1. Turn over the unit on a soft cloth. 2. Remove the 5 setscrews.
			
Ref. No 2	How to remove the turntable platter	Ref. No 4	How to remove the main circuit board
Procedure 2	<ol style="list-style-type: none"> 1. Open the dust cover. 2. Remove the turntable mat and drive belt. 3. Lift the turntable platter. 	Procedure 2 → 3 → 4	<ul style="list-style-type: none"> • Remove the 7 setscrews.
			
<p>How to remove the 45-rpm adaptor</p> <ul style="list-style-type: none"> • Turn the 45-rpm adaptor counter-clockwise and push the arrow-marked part to release the claw. 		<p>Caution for fitting</p> <ul style="list-style-type: none"> • When attaching the knobs for the record size selector and speed selector, move them to the right (arrow), before pushing firmly into the square holes. 	

Ref. No 5 **How to remove the operation button and selector knob**

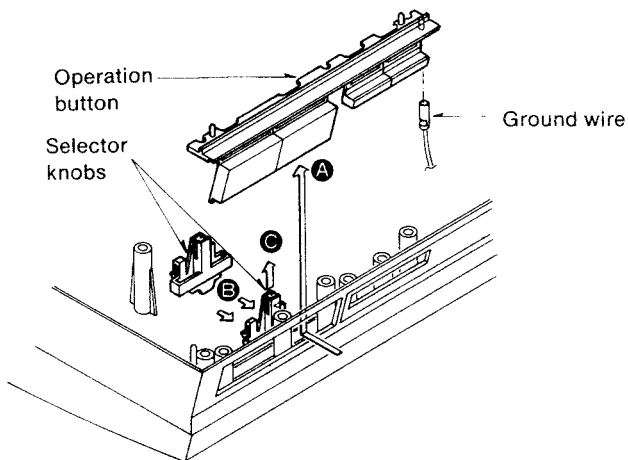
Procedure
4 ▶ 5

Operation button

1. Remove the operation button in the direction of the arrow **A**.
2. Pull out the ground wire.

Selector knob

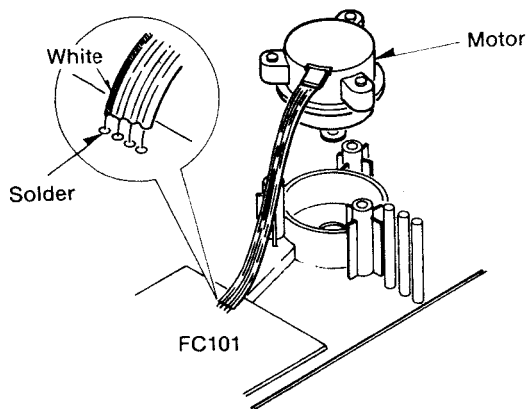
1. Release the 2 claws that fasten the selector knob (arrow **B**).
2. Pull out the selector knob (arrow **C**).



Ref. No 6 **How to remove the turntable drive motor**

Procedure
2 ▶ 3 ▶ 6

1. Unsolder the terminal (FC101).
2. Remove the motor from cabinet.



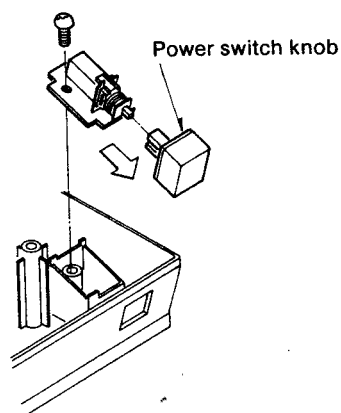
Caution for fitting (Flat cable)

- The white side of the flat cable goes to the ① pin of the FC101 terminal.

Ref. No 7 **How to remove the power switch knob**

Procedure
2 ▶ 3 ▶ 7

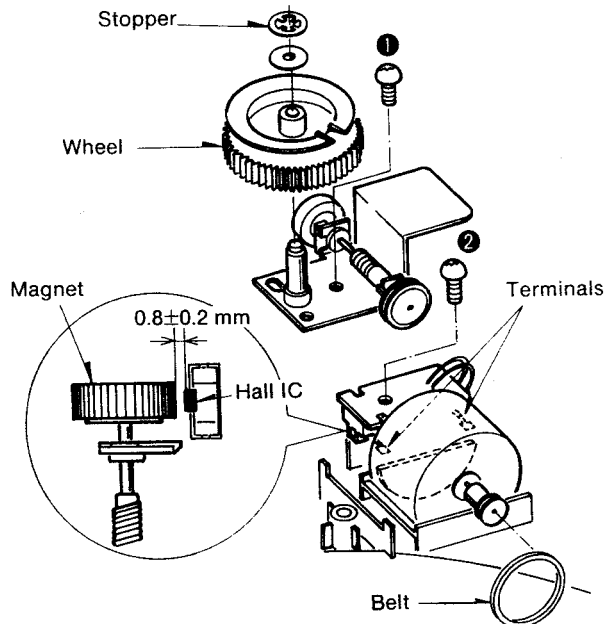
1. Remove the screw.
2. Pull out the knob from power switch.



Ref. No 8 **How to remove the arm drive motor**

Procedure
2 ▶ 3 ▶ 8

1. Remove the belt.
2. Remove the wheel stopper and wheel.
3. Remove the screw ①.
4. Unsolder the motor leads.



Note:

- Connection of the arm drive motor
- Red wire (+) terminal of arm drive motor
 - Blue wire (-) terminal of arm drive motor
 - The (-) terminal of motor is arrow marked.

How to remove the arm position detecting circuit board.

1. Unsolder 2 leads.
2. Remove the screw ②.

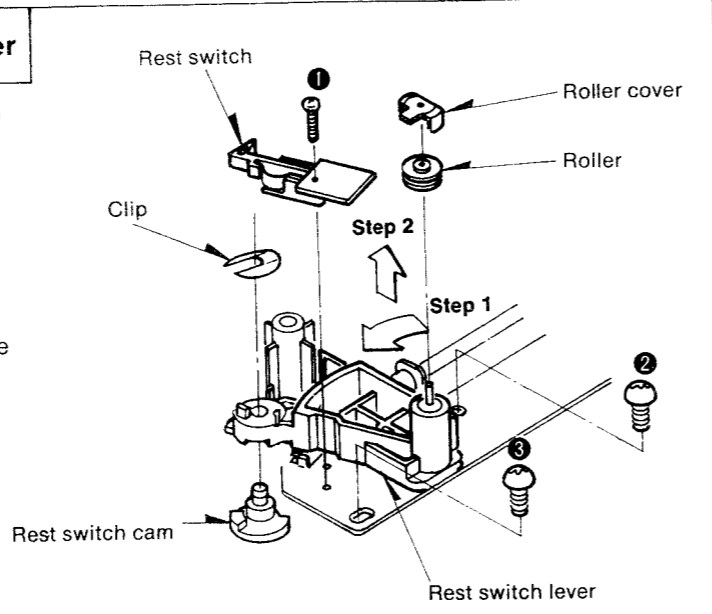
Caution for fitting

Clearance between the count magnet and the Hall IC should be 0.8 ± 0.2 mm

Ref. No 9
How to remove the rest switch lever

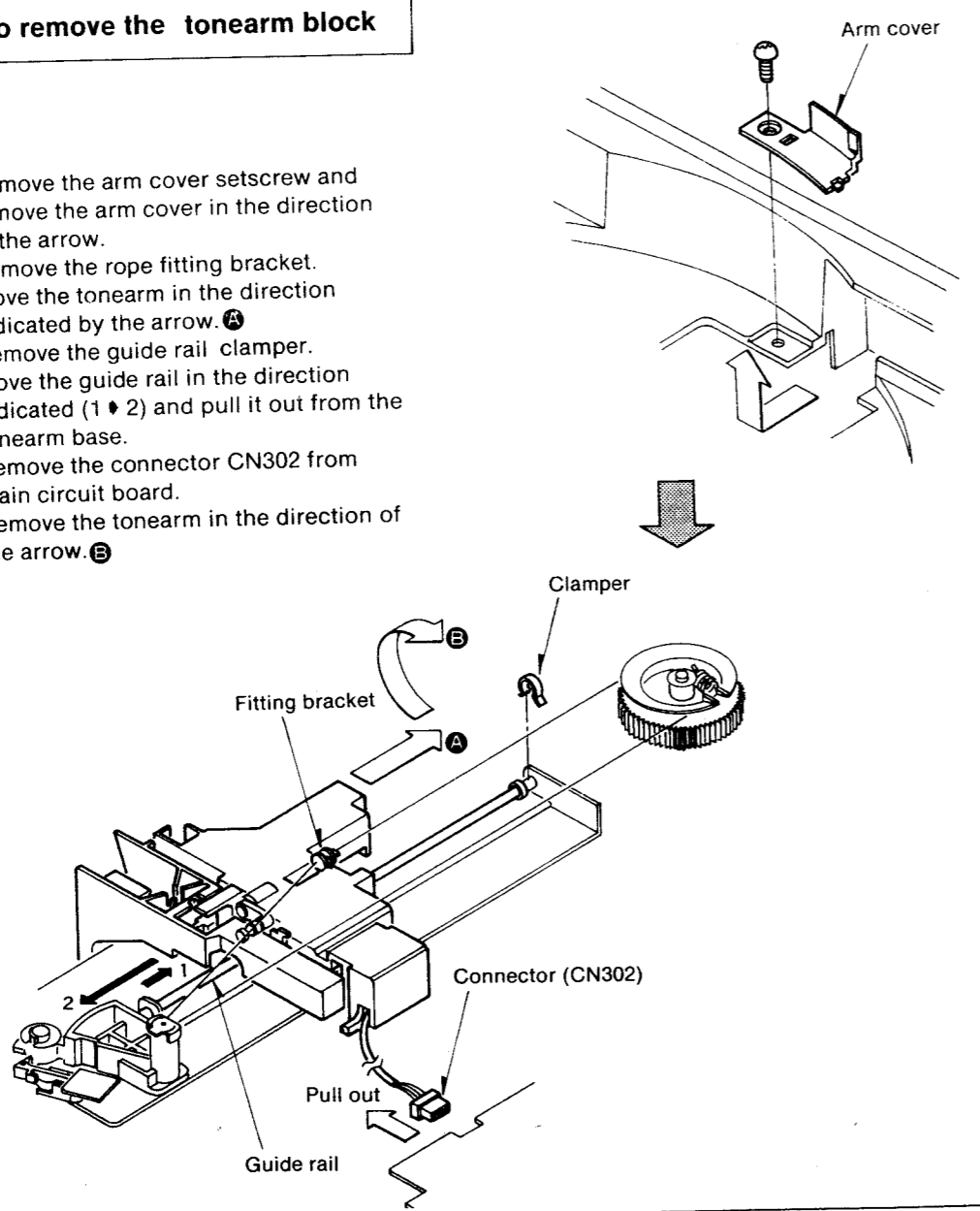
- Procedure 2 ▶ 3 ▶ 9**
1. Remove the screw ❶ of the rest switch P.C.B.
 2. Remove the roller cover and roller.
 3. Remove the 2 setscrews (❷, ❸) of the guide rail base.
 4. Lift the guide rail base and remove the rest switch lever in the direction of the arrow. **(Step 1, 2)**
 5. To remove the rest switch cam, remove the clip.

Note: If the rest switch cam is removed, be sure to perform start position adjustment after reattaching it.



Ref. No 10
How to remove the tonearm block

- Procedure 2 ▶ 3 ▶ 10**
1. Remove the arm cover setscrew and remove the arm cover in the direction of the arrow.
 2. Remove the rope fitting bracket.
 3. Move the tonearm in the direction indicated by the arrow. **(A)**
 4. Remove the guide rail clamber.
 5. Move the guide rail in the direction indicated (1 ▶ 2) and pull it out from the tonearm base.
 6. Remove the connector CN302 from main circuit board.
 7. Remove the tonearm in the direction of the arrow. **(B)**



- How to remove the tonearm**
1. Remove the 2 setscrews (❶, ❷).
 2. Lift the tonearm.

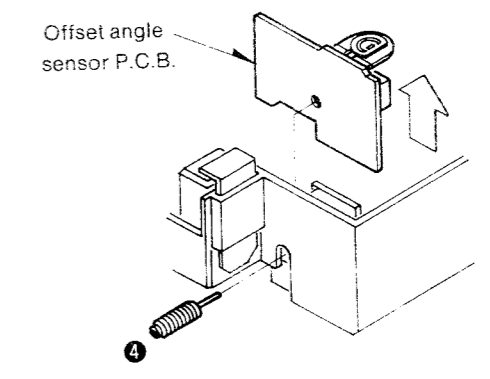
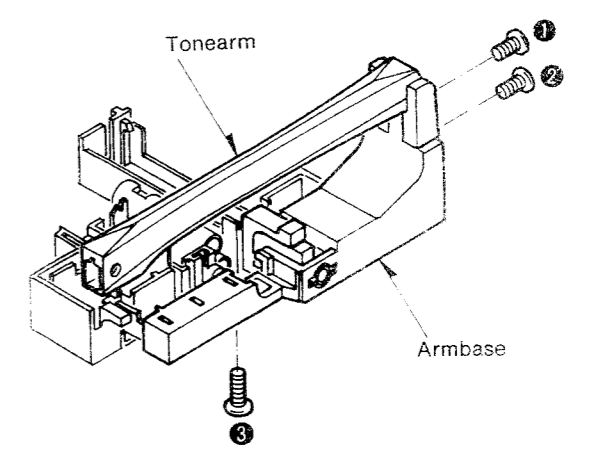
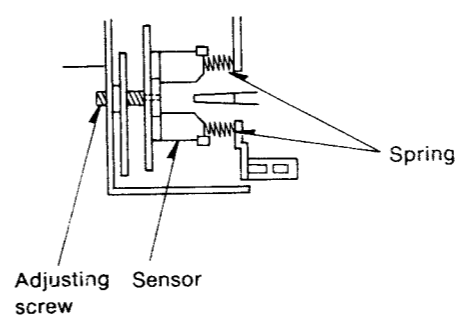
- How to remove the arm base.**
- Remove the screw ❸.

- How to remove the offset angle sensor P.C.B.**
1. Remove the screw ❹.
 2. Lift the offset angle sensor P.C.B.

Note: After assembly, it is necessary to adjust the offset voltage.

Cautions for assembly (offset angle sensor P.C.B.)

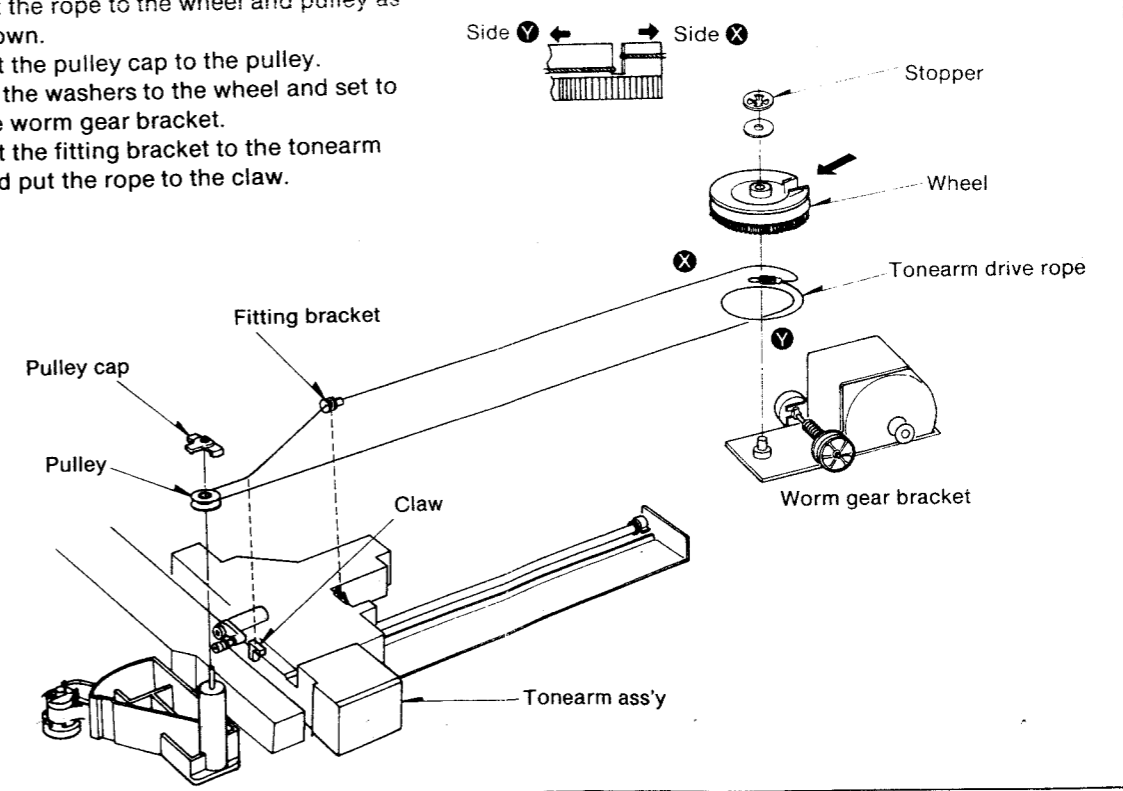
1. The adjusting screw should be aligned to the hole of P.C.B.
2. The springs should push the sensor.



Ref. No 11
How to set the tonearm drive rope

- Procedure 2 ▶ 3 ▶ 11**
1. Set the rope to the wheel and pulley as shown.
 2. Put the pulley cap to the pulley.
 3. Fit the washers to the wheel and set to the worm gear bracket.
 4. Set the fitting bracket to the tonearm and put the rope to the claw.

Caution: The rope should be set to the wheel in the direction indicated. (← →)



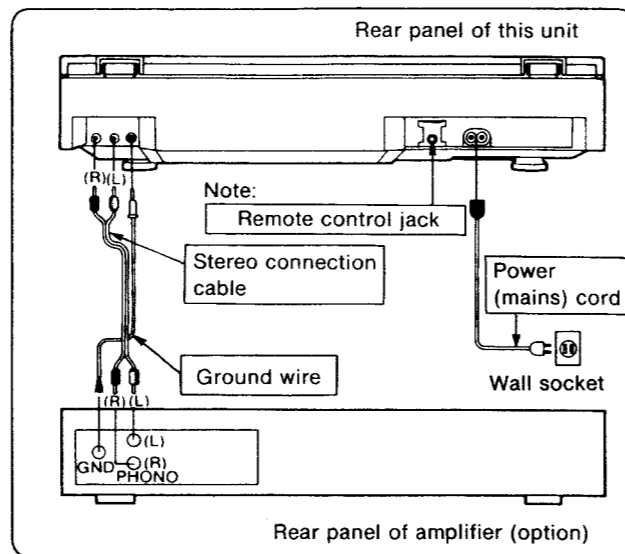
■ CONNECTIONS

Precautions

- Make sure your hands are dry when making connections.
 - Turn power (mains) off to all components before making connections.
 - Be sure to read the operating instructions for all units connected.
 - If the turntable is lifted vertically or turned over, remove the turntable mat to avoid damage to the stylus.
1. Use the stereo connection cable to connect the turntable to your amplifier or receiver. Be sure that the white plugs are connected to the left channel jacks and the red plugs are connected to the right channel jacks.
 2. Connect the ground wire to the turntable's ground jack and connect the end of the wire to the amplifier or receiver's ground (GND) screw.
Note that hum may occur if you neglect to connect the ground wire.
 3. Plug the female end of the power (mains) cord to the turntable's AC-IN socket, and connect the other end to an AC mains outlet.

Note:

The configuration of the power (mains) cord may differ according to area.



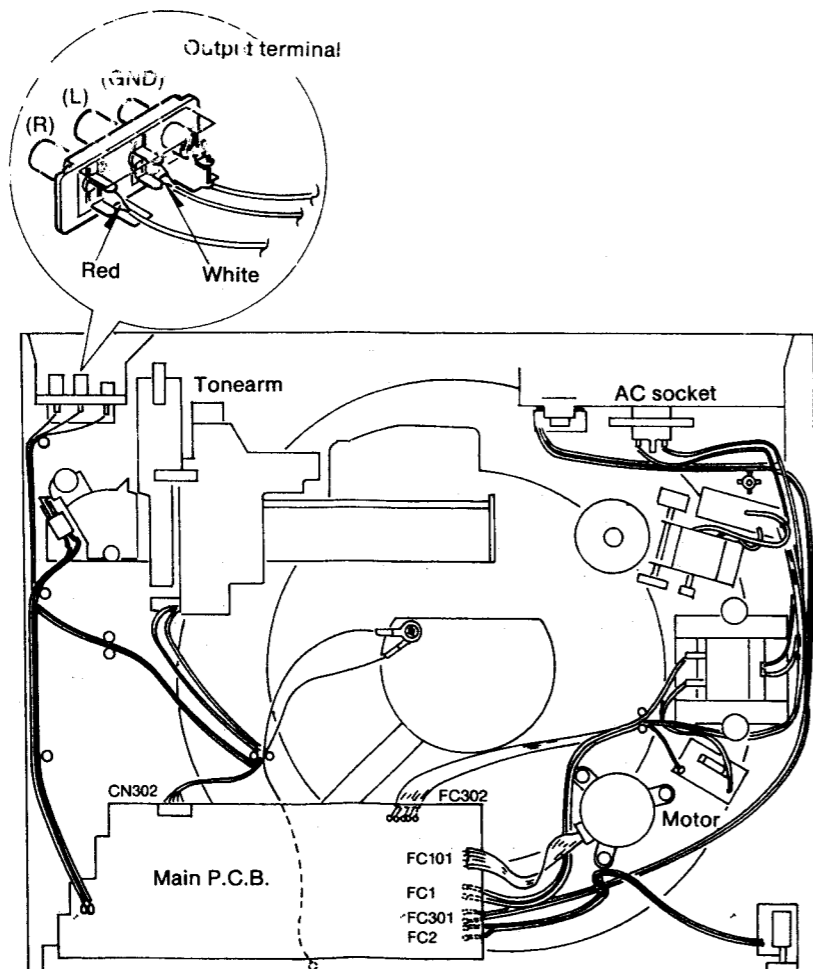
Note:

The remote control jack is provided for remote control connection with future components of the stereo system only. Refer to the operating instructions of system stereo unit.

These operations are possible by using the wired remote control unit provided with the stereo system unit.

- To start play
- To stop play

■ WIRING DIAGRAM



■ MEASUREMENTS AND ADJUSTMENTS

Control position and equipment used

- Size selector.....30
- Oscilloscope
- DC electronic voltmeter
- 30 cm record

START POSITION ADJUSTMENT (Stylus set-down)

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

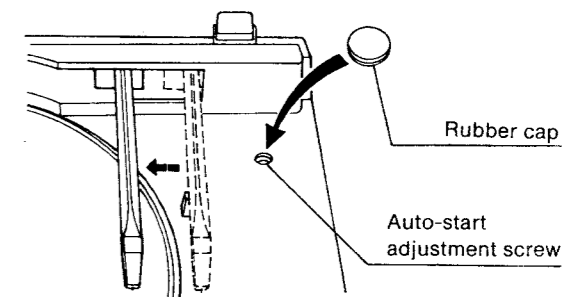
You will have easier access to the auto-start adjustment screw with the tonearm toward the center.

1. Remove the rubber cap.
2. Turn the knob with a screwdriver, clockwise or counterclockwise as necessary.

If the stylus tip sets down too far in the record groove, —turn counterclockwise.

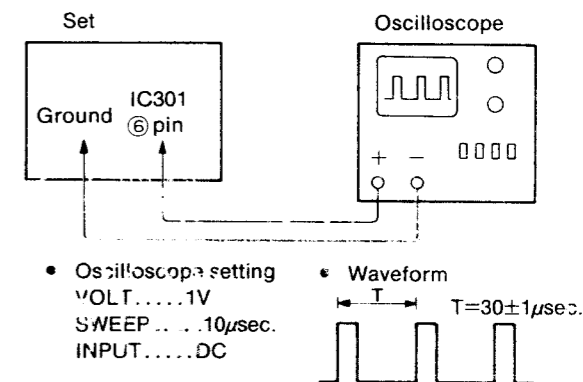
If the stylus tip sets down outside of the record. —turn clockwise.

Adjust so that the stylus tip lands 1-2 mm in from the edge of the record.



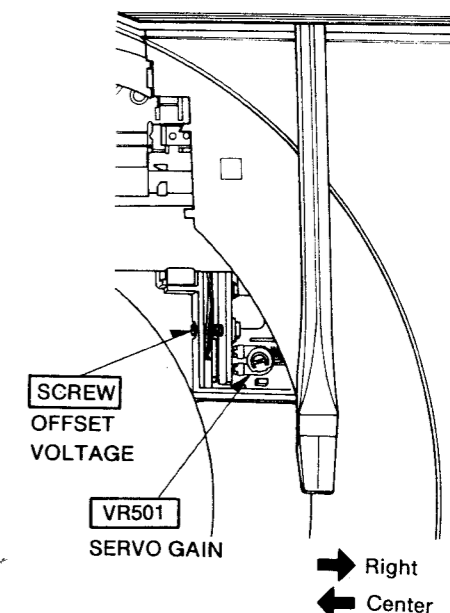
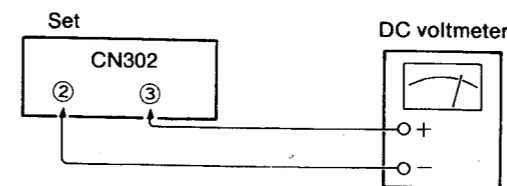
CLOCK FREQUENCY ADJUSTMENT

1. Remove the bottom board.
2. Connect IC301 pin 7 and pin 27 (+5V).
3. Connect the oscilloscope to IC301 pin 6.
4. Turn the power switch "on" and adjust VR301 so that the output waveform cycle is $30 \pm 1 \mu\text{sec}$.



SERVO GAIN AND OFFSET VOLTAGE ADJUSTMENT

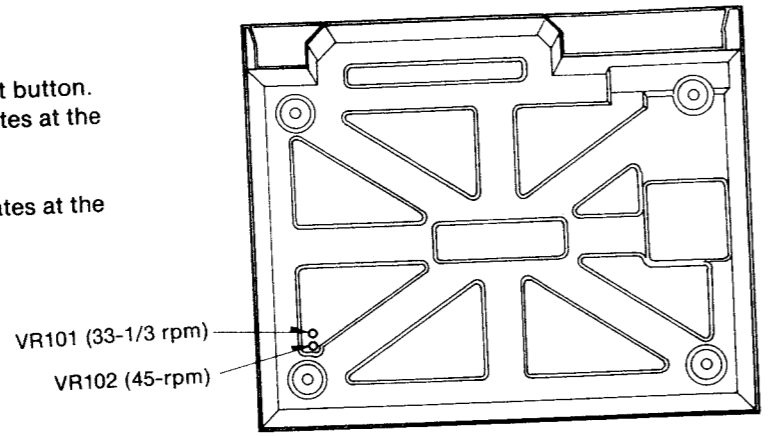
1. Remove the turntable platter and bottom board.
2. Remove the arm drive belt (Refer to page 4).
3. Turn the worm gear and move the tonearm to the position as shown.
4. Connect DC voltmeter to CN302 pin 3 and pin 2.
5. Turn the power switch "on".
6. Turn the VR501 so that the voltage is 3.6V with tonearm completely turned to the right (offset angle sensor "open"). (Servo gain adjustment)
7. Return the tonearm to the center and make sure that the voltage is 1.8V.
8. If the voltage is not 1.8V, adjust it by turning the offset voltage adjusting screw. (Offset voltage adjustment)



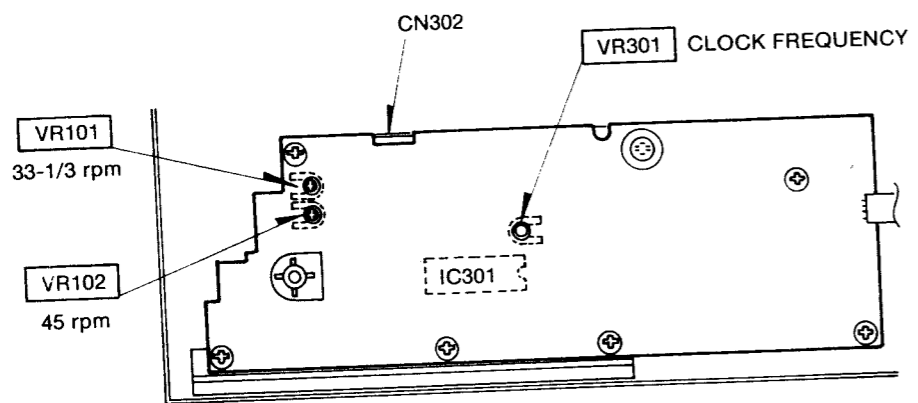
ROTATING SPEED ADJUSTMENT

1. Open the dust cover.
2. Set the speed selector to "33".
3. Turn the power switch "on" and press the start button.
4. Adjust **VR101** so that the turntable platter rotates at the rated speed. (33-1/3 rpm)
5. Set the speed selector to "45".
6. Adjust **VR102** so that the turntable platter rotates at the rated speed. (45 rpm)

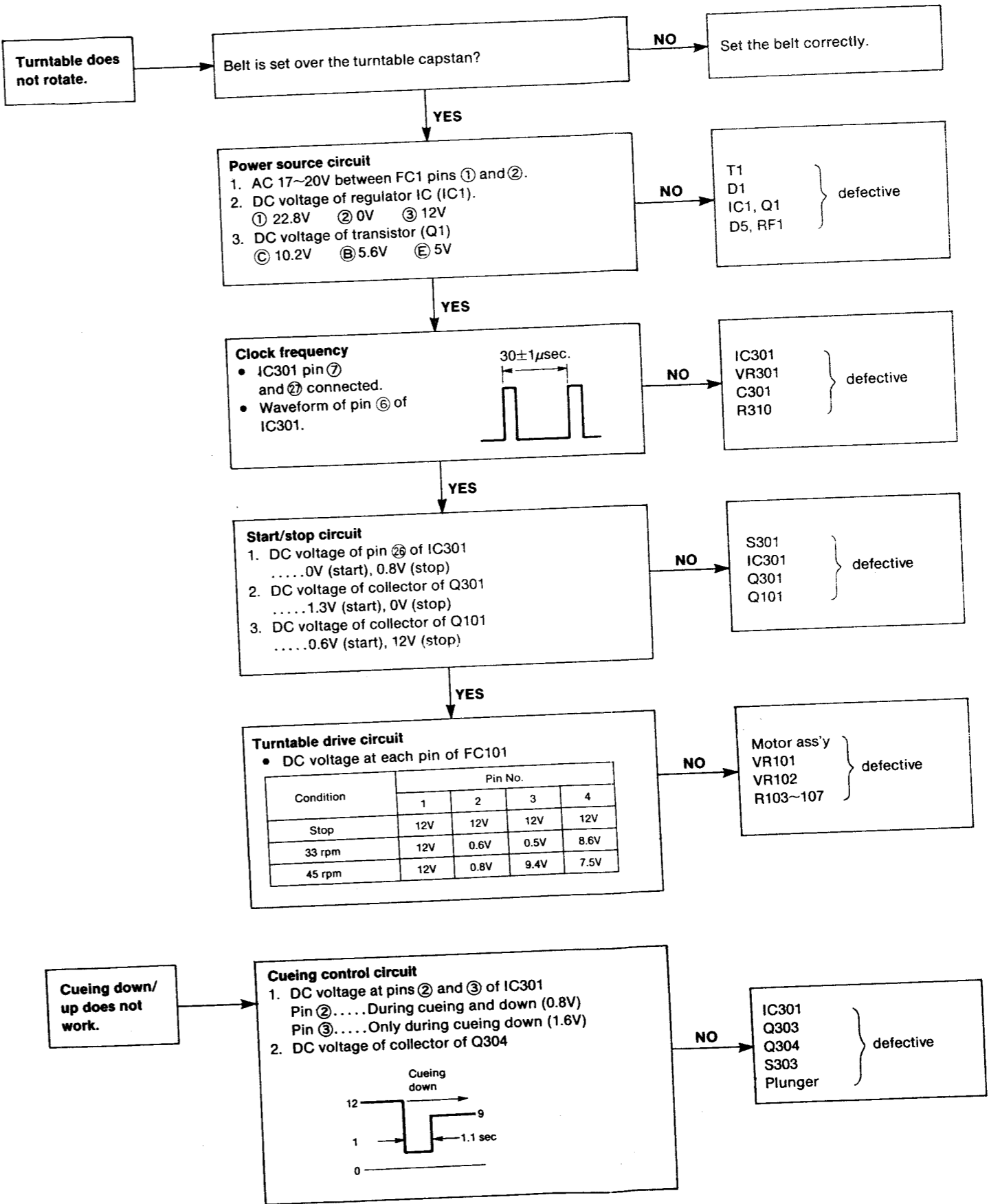
Note: Be sure to adjust 33-1/3 rpm first.



Adjustment points



TROUBLESHOOTING



EASUREMENTS AND ADJUSTMENTS

Tool position and equipment used

- DC electronic voltmeter
- 30 cm record

RT POSITION ADJUSTMENT (stylus set-down)

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

stylus will have easier access to the auto-start adjustment screw with the tonearm toward the center.

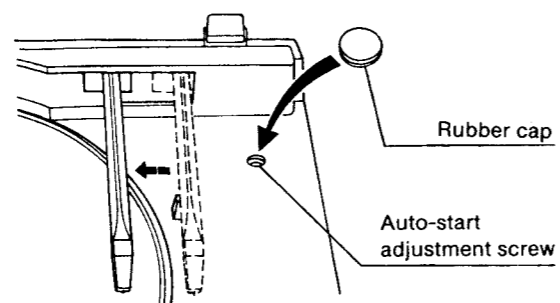
move the rubber cap.

turn the knob with a screwdriver, clockwise or counterclockwise as necessary.

stylus tip sets down too far in the record groove, turn **counterclockwise**.

stylus tip sets down outside of the record, turn **clockwise**.

adjust so that the stylus tip lands 1-2 mm in from the edge of the record.



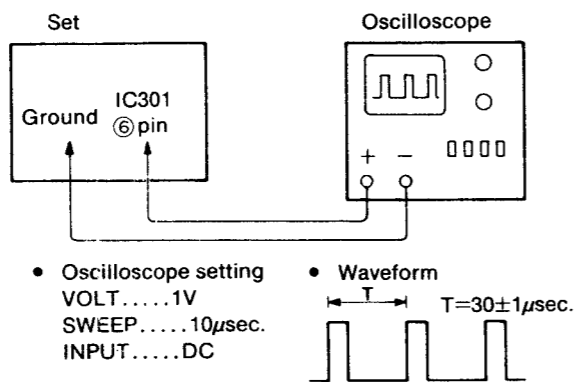
CLK FREQUENCY ADJUSTMENT

move the bottom board.

connect IC301 pin 7 and pin 27 (+5V).

connect the oscilloscope to IC301 pin 6.

turn the power switch "on" and adjust VR301 so that the output waveform cycle is $30 \pm 1 \mu\text{sec}$.



VO GAIN AND OFFSET VOLTAGE ADJUSTMENT

move the turntable platter and bottom board.

move the arm drive belt (Refer to page 4).

turn the worm gear and move the tonearm to the position as shown.

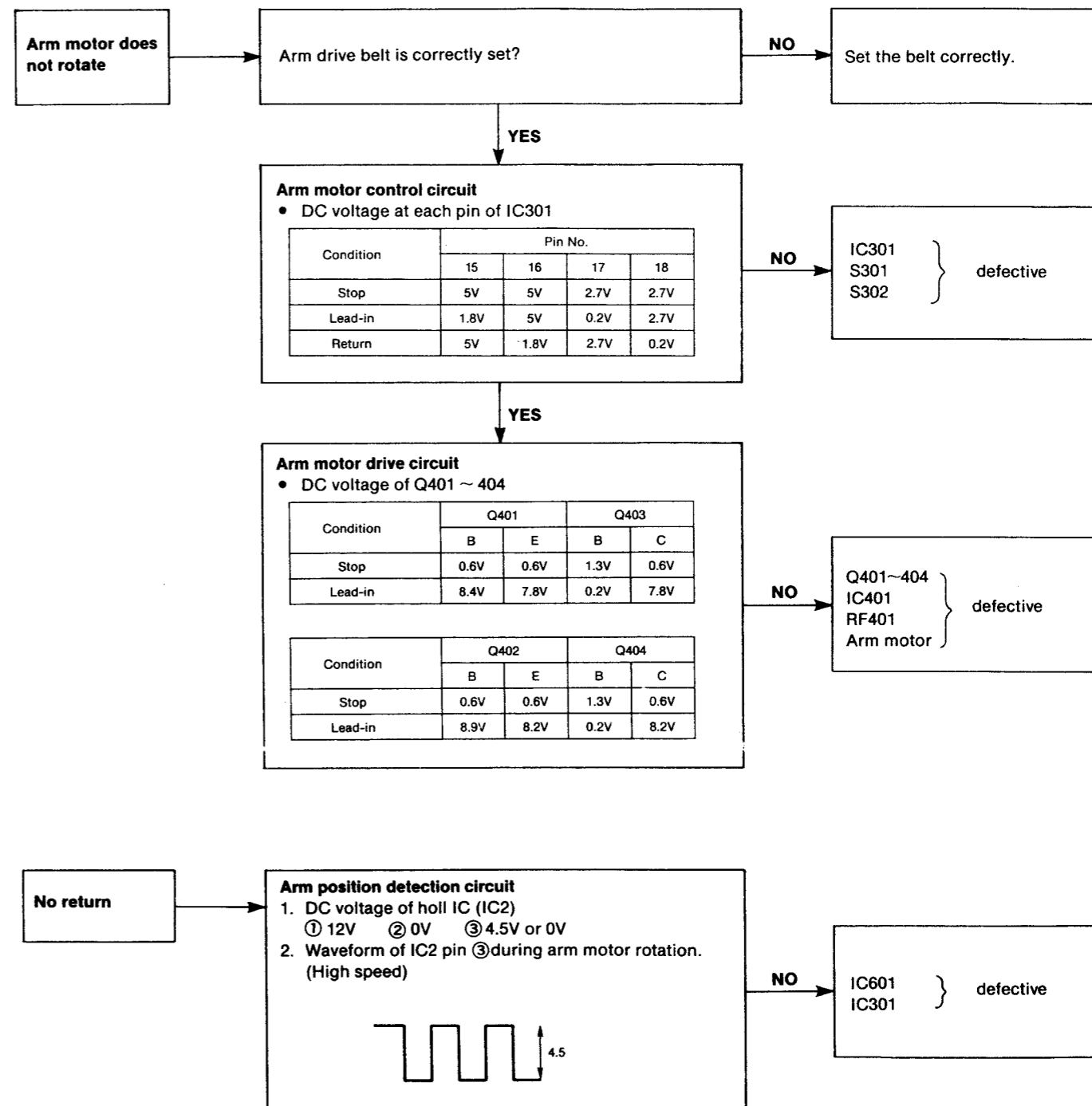
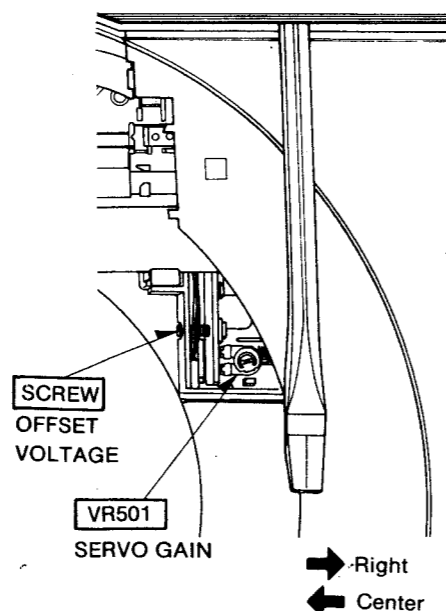
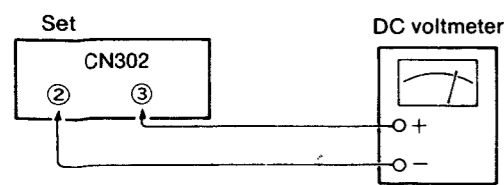
connect DC voltmeter to CN302 pin 3 and pin 2.

turn the power switch "on".

turn the VR501 so that the voltage is 3.6V with the tonearm completely turned to the right (offset angle selector "open"). (**Servo gain adjustment**)

turn the tonearm to the center and make sure that the voltage is 1.8V.

if the voltage is not 1.8V, adjust it by turning the offset voltage adjusting screw. (**Offset voltage adjustment**)



REPLACEMENT PARTS LIST (Electrical parts)

Notes:

- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
- Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- Unless otherwise specified. All resistors are in OHMS (Ω) K=1000 Ω , M=1000k Ω . All capacitors are in MICROFARADS (μ F), P=10⁻⁶ μ F.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			D303~308	MA165	Diode	POWER TRANSFORMERS		
IC1	AN78M12	Integrated Circuit	D501	MA165	Diode	T1	Δ SLT48DT4E	Power Source
IC301	MN1421FPC	Integrated Circuit	VARIABLE RESISTORS			[EK, XL]		
IC401	AN6554	Integrated Circuit	VR101,	EVN61AA00B52	Variable Resistor,	T1	Δ SLT57DTE17E	Power Source
IC601	DN6838-S	Hall IC	102		500 Ω (B)	[XA, XM,		
TRANSISTORS			VR301	EVN61AA00B54	Variable Resistor,	PA, PE,		
Q1	2SD1423	Transistor			50k Ω (B)	PC		
Q101	2SC1383	Transistor	VR501	EVNKOAA00B53	Variable Resistor,	T1	Δ SLT48DT3E	Power Source
Q301, 303	2SC3311	Transistor			5 k Ω (B)	[other]		
Q304, 310			PHOTO INTERRUPTER			FUSES		
Q304	2SD892	Transistor	PC501	ON1186	Photo Interrupter	F1	Δ XBAS2C02T1B	250V, T200 mA
Q305	UN4111	Transistor	SWITCHES			[XA, XM,		
Q308, 309	2SA1309	Transistor	S1	Δ SFDSF01N02	Power	PA, PE,		
Q401, 402	2SD1225M	Transistor	S101	SSSB1	Speed Selector	PC		
Q403, 404	2SD947	Transistor	S301~304	EVQQS205K	Operation	F1	Δ XBAS2C04T1B	250V, T400 mA
DIODES			S305	SSSB1	Size Selector	[other]		
D1	Δ SVDS1WB40	Rectifier	S306	SFDS05N01	Record Detector	F2	Δ XBAS2C04T1B	250V, T400 mA
D5	MA4056	Zener, 5.6V	S601	SSPB1	Rest	[XA, XM,		
D6, 302	SVDS1121R	LED	S901	Δ SFDSHXW225-3	Voltage Selector	PA, PE,		
D102	MA4039	Zener, 3.9V			[XA] only	PC		
D301	MA4062	Zener, 6.2V				only		

Resistors and Capacitors

Numbering System of Resistor

Example

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

Numbering System of Capacitor

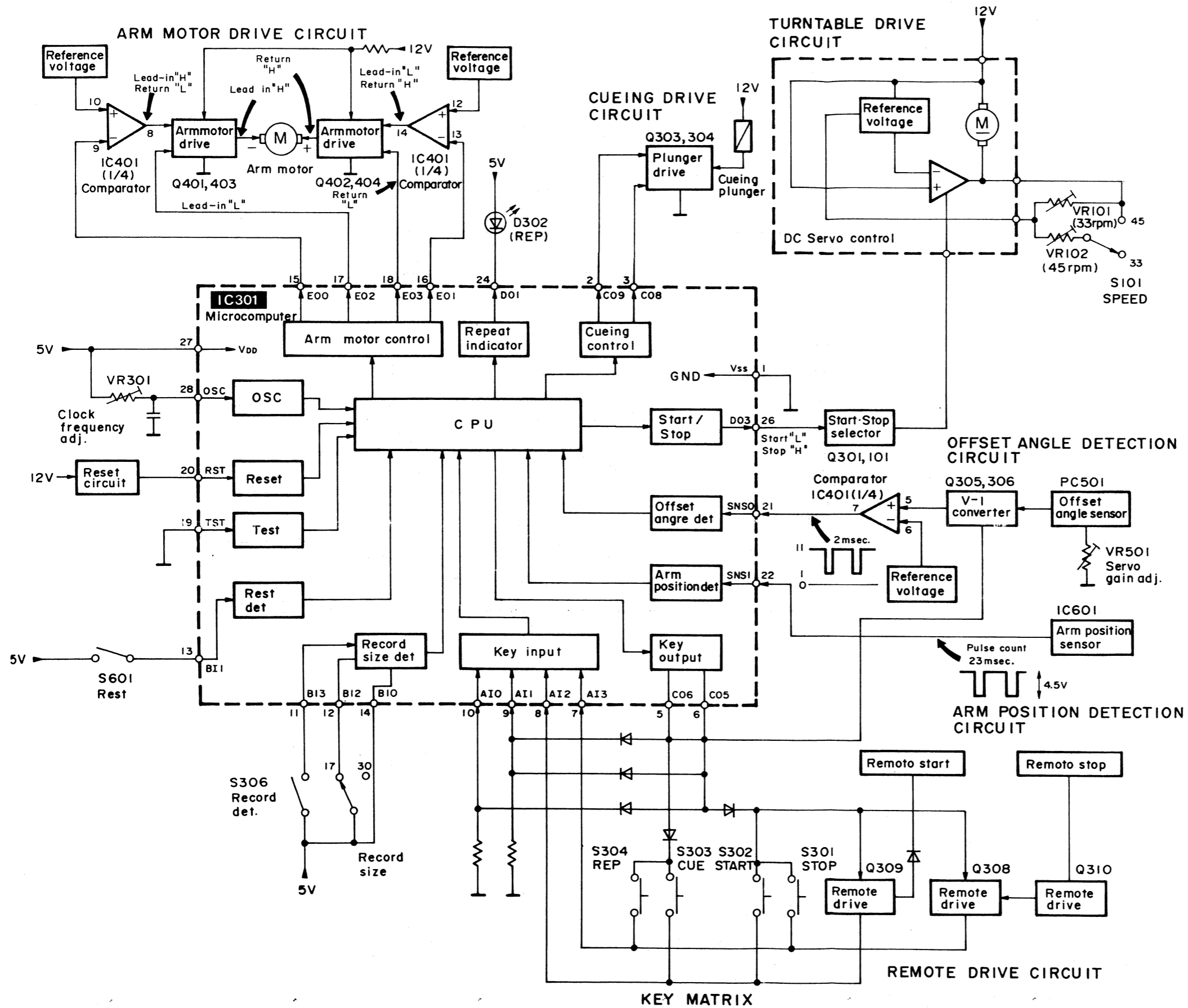
Example

ECE	A or B	0J	U	470
Type	Shape	Voltage	Peculiarity	Value
(Electrolytic)		(6.3V)	use	(47 μ F)
ECQ	G	1	223	K
Type	Peculiarity	Voltage	Value	Tolerance
(Plastic Film)		(100V D.C)	(0.022 μ F)	(\pm 10%)
ECK	R	1H	473	Z
Type	Shape	Voltage	Value	Tolerance
(Ceramic)		(50V D.C)	(0.047 μ F)	(\pm 20%)

Type	Voltage		Tolerance
	ECE Type	Others	
ECE : Electrolytic	0J : 6.3V	1C : 16V D.C	K : \pm 10%
ECK : Ceramic	1A : 10V	1E : 25V D.C	Z : +80%
ECF : Ceramic	1C : 16V	05 : 50V D.C	-20%
ECC : Ceramic	1E : 25V	1H : 50V D.C	
ECQ : Plastic Film	1V : 35V	1 : 100V D.C	
	1H : 50V		
	1J : 63V		

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
RESISTORS			R313, 314	ERDS2TJ333	33K	R346	ERDS2TJ681	680	CAPACITORS		
RF1	Δ ERD2FCG330	33	R315, 316	ERDS2TJ333	33K	R401, 402	ERDS2TJ683	68K	C1, 2	Δ ECQG1223KZ	0.022
RF401	Δ ERD2FCG180	18	R317	ERDS2TJ102	1K	R403	ERDS2TJ472	4.7K	C3	Δ ECQG1223KZ	0.022
R1	ERDS2TJ681	680	R318, 319	ERDS2TJ332	3.3K	R404	ERDS2TJ122	1.2K	C4	ECEB1VU102	1000
R2	ERDS2TJ221	220	R320	ERDS2TJ272	2.7K	R405	ERDS2TJ222	2.2K	C5	ECEA1CU330	33
R3	ERDS2TJ681	680	R321, 322	ERDS2TJ331	330	R406	ERDS2TJ102	1K	C301	ECCD1H680K	68P
R103, 104	ERDS2TJ471	470	R323	ERDS2TJ562	5.6K	R407	ERDS2TJ224	220K	C302	ECFR1E104ZFM	0.1
R105	ERDS2TJ102	1K	R326	ERDS2TJ272	2.7K	R408	ERDS2TJ222	2.2K	C303	ECEA0JU470	47
R106	ERDS2TJ122	1.2K	R331	ERDS2TJ102	1K	R409	ERDS2TJ102	1K	C305	ECEA1EU3R3	3.3
R107	ERG1ANJ220	22	R332	ERDS2TJ562	5.6K	R410	ERDS2TJ224	220K	C306	ECKD1H223ZF	0.022
R302, 303	ERDS2TJ102	1K	R334	ERDS2TJ222	2.2K	R411	ERDS2TJ272	2.7K	C307	ECQG1H104KZT	0.1
R304, 305	ERDS2TJ102	1K	R335	ERDS2TJ102	1K	R412	ERDS2TJ681	680	C308	ECFR1E104ZFM	0.1
R306	ERDS2TJ821	820	R336, 337	ERDS2TJ332	3.3K	R413, 414	ERDS2TJ101	100	C310, 311	ECKD1H103ZF	0.01
R307	ERDS2TJ271	270	R338	ERDS2TJ332	3.3K	R415, 416	ERDS2TJ471	470	C312	ECKD1H103ZF	0.01
R308	ERDS2TJ681	680	R340, 341	ERDS2TJ223	22K	R501	ERDS2TJ391	390	C313	ECFR1E104ZFM	0.1
R309, 310	ERDS2TJ562	5.6K	R342, 343	ERDS2TJ223	22K	R502	ERDS2TJ681	680	C401, 402	ECQG1223KZ	0.022
R311	ERDS2TJ153	15K	R344	ERDS2TJ223	22K				C403	ECEA1CU330	33
R312	ERDS2TJ472	4.7K	R345	ERDS2TJ103	10K				C404, 405	ECEA0JU470	47
									C601	ECFR1E104ZFM	0.1

■ BLOCK DIAGRAM

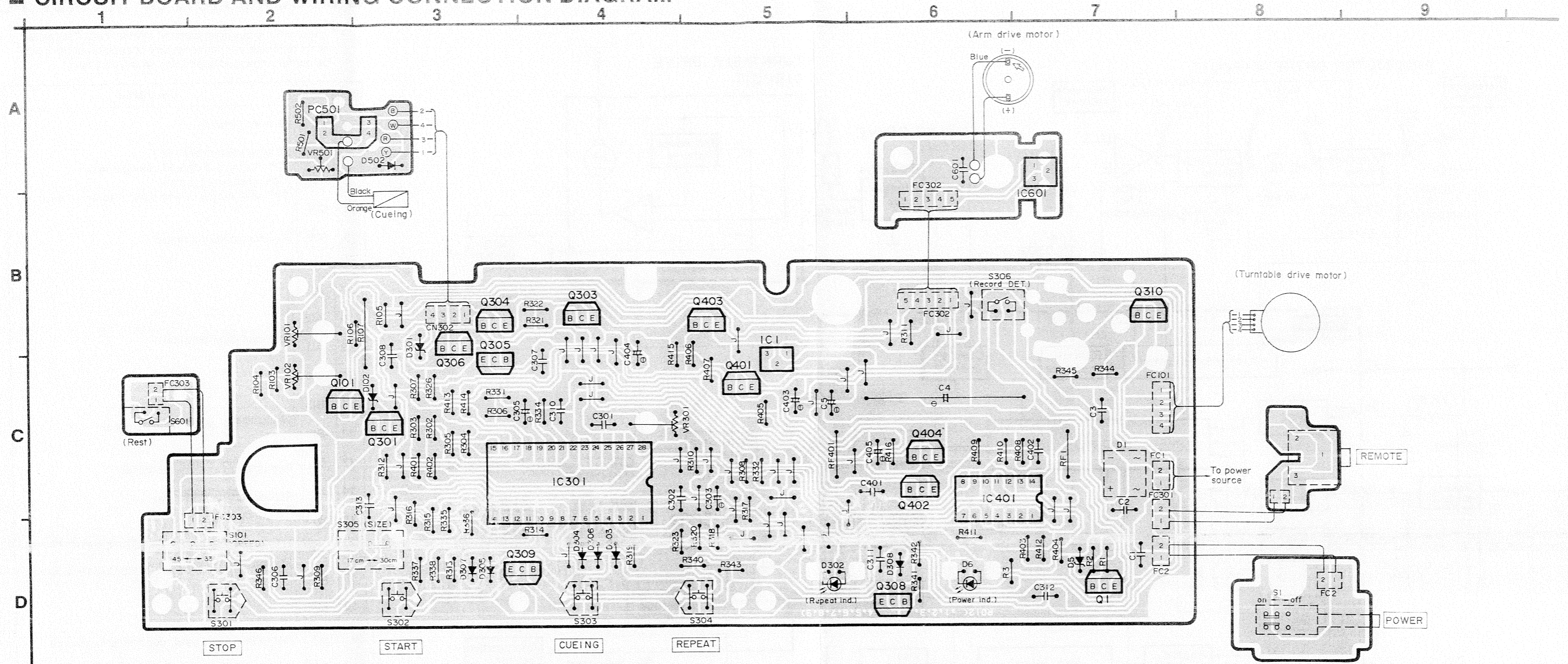


■ DESCRIPTION OF MN1421FPC

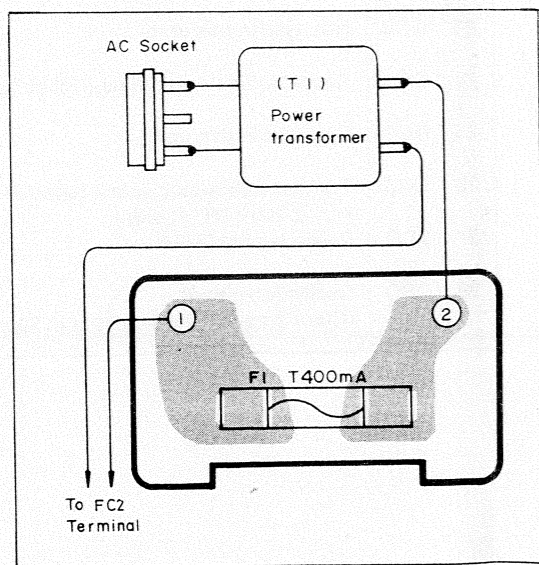
* These are the basic functions of MN1421FPC. Therefore, some terminals are not necessary of circuit functions may be partially changed depending on the purposes.

No.	Mark	Description
1	VSS	Ground terminal
2	C09	Cueing control terminal ("H" during cueing and cueing down)
3	C08	Cueing control terminal ("H" only during cueing down—about 1.1 sec.)
4	C07	Key scan output terminal
5	C06	
6	C05	
7	AI3	Key scan input terminal
8	AI2	
9	AI1	
10	AI0	Auto size and speed select terminal
11	BI3	
12	BI2	
13	BI1	Rest position detecting terminal
14	BI0	Record detection terminal
15	E00	Tonearm drive motor control terminal (Arm servo)
16	E01	
17	E02	
18	E03	
19	TEST	Test terminal (not used, connected to ground)
20	RST	Reset terminal (micom is reset at "L")
21	SNS0	Offset angle detection input terminal
22	SNS1	Arm position detection input terminal
23	DO0	Not used in this unit
24	DO1	Repeat indicator terminal (ON at "L")
25	DO2	Not used in this unit
26	DO3	Turntable start/stop select terminal ("L" at start; "H" at stop)
27	VDD	Power supply (+5V)
28	OSC	Oscillation circuit (Clock frequency is adjusted to $30\mu\text{s} \pm 1\mu\text{s}$)

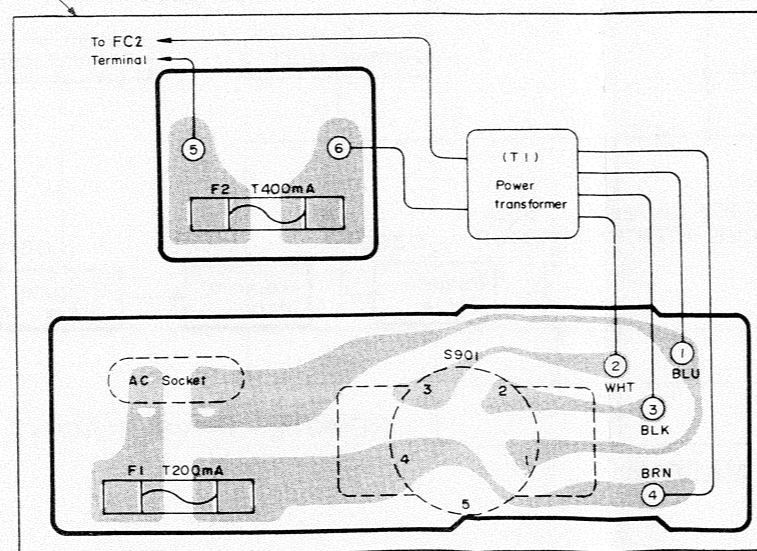
CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



• Power source circuit
For Continental Europe, United Kingdom and Australia.

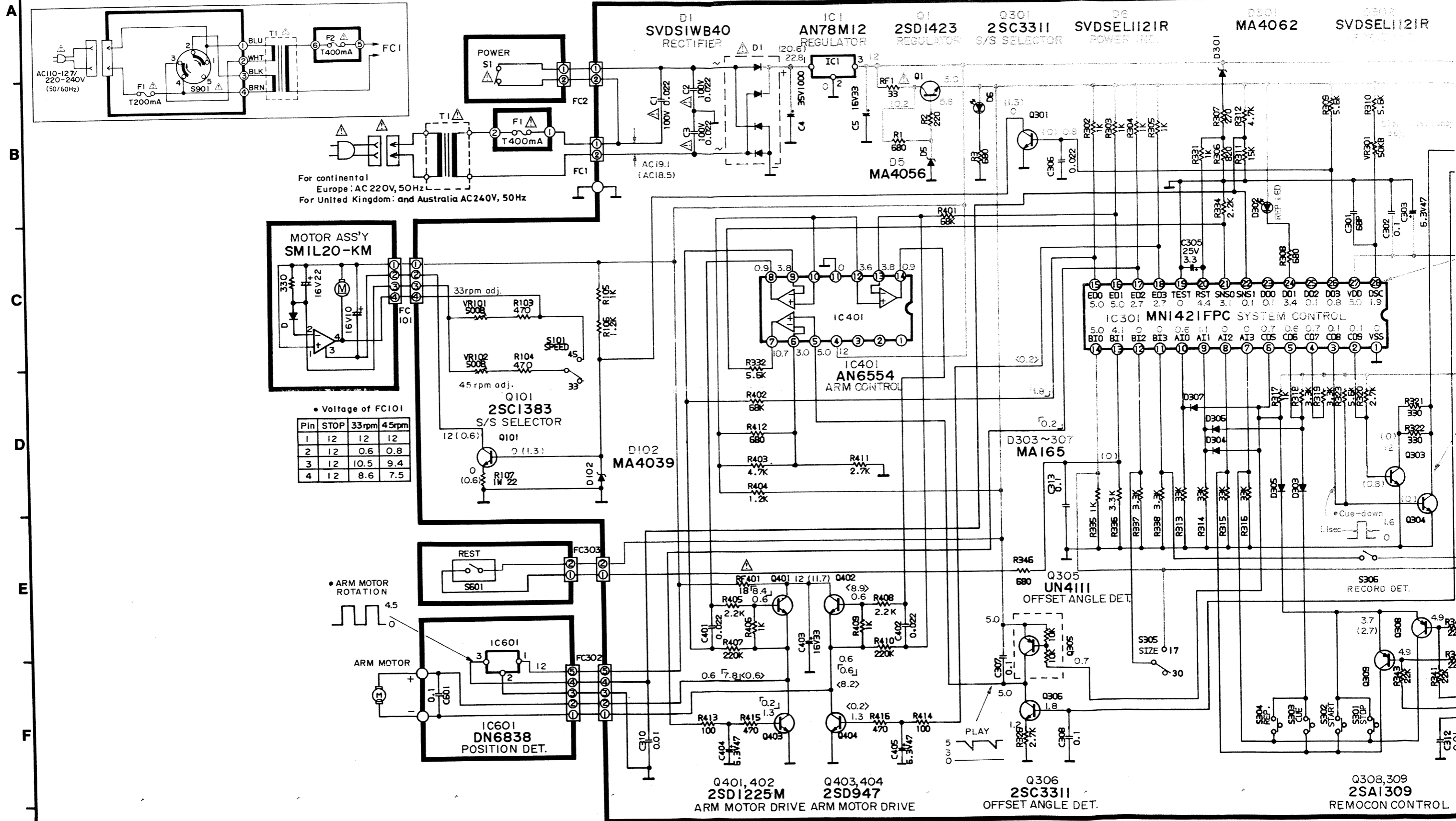


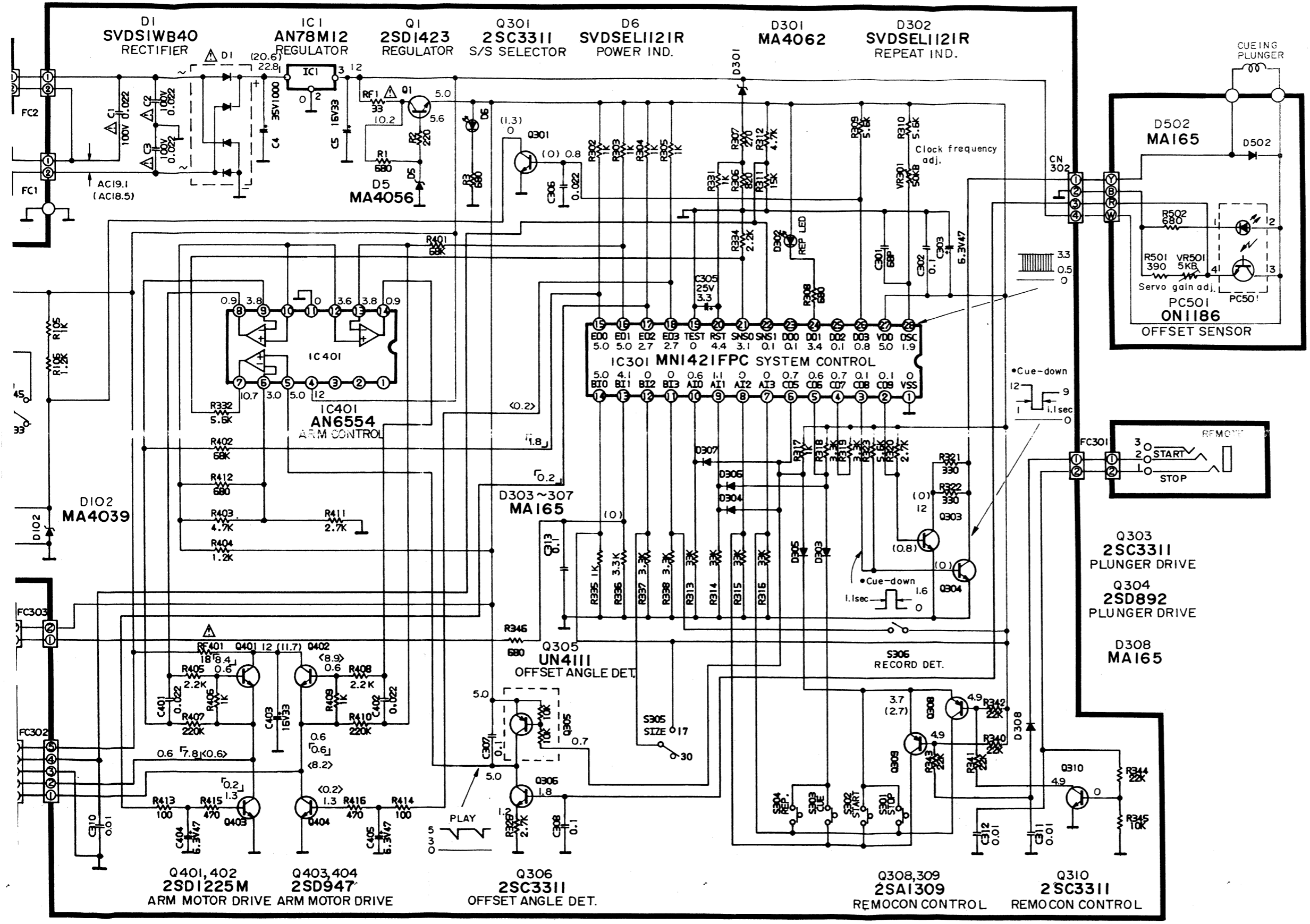
For others



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

- Product for Southeast Asia, Oceania, Africa, Middle Near East, Central South America, Far East PX, European Military and European Audio Club.





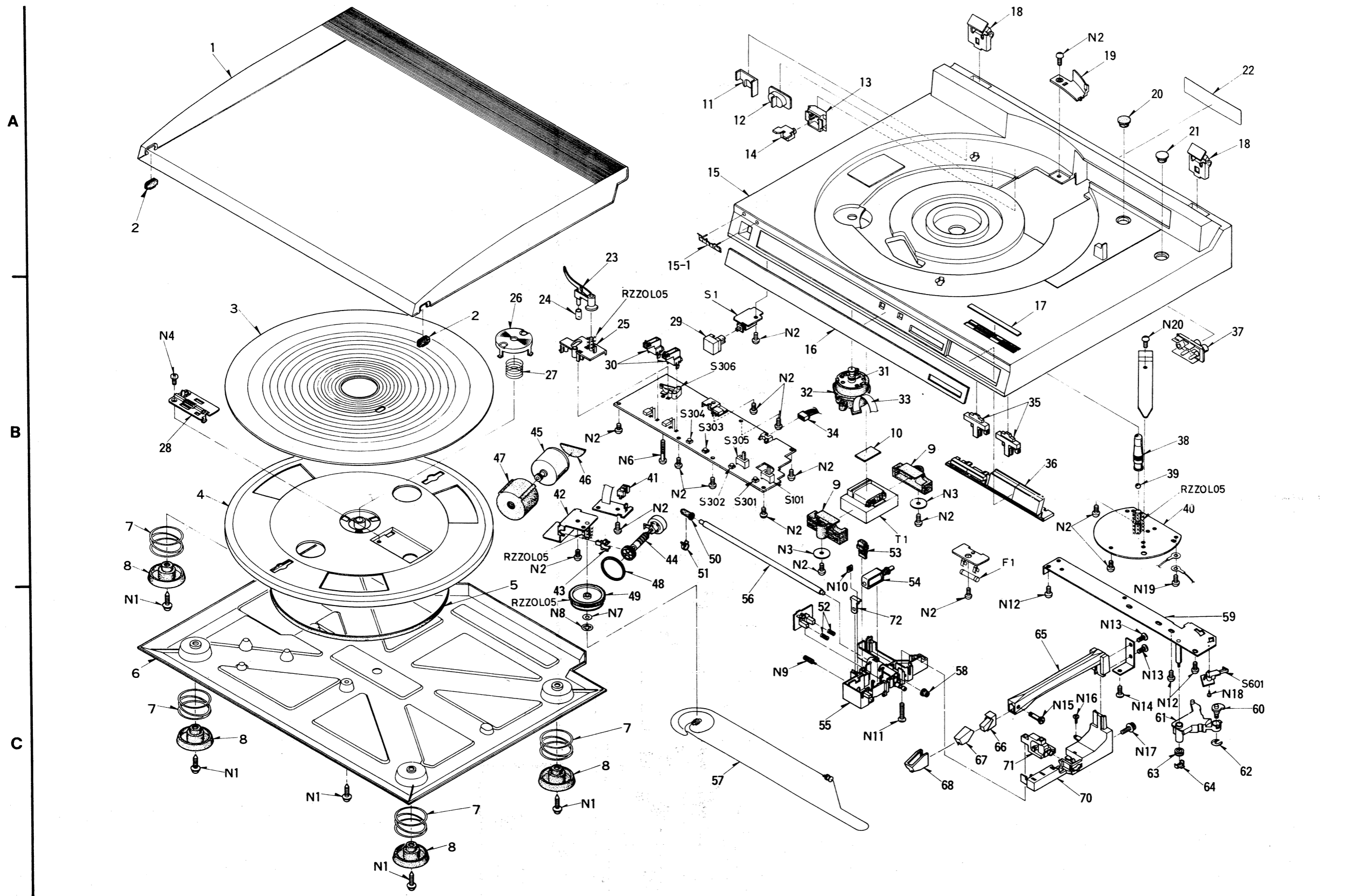
- Notes:
- S1 : Power switch in "on" position.
 - S101 : Speed selector switch in "33" position.
 - S301 : Stop switch.
 - S302 : Start switch.
 - S303 : Cueing switch.
 - S304 : Repeat switch.
 - S305 : Record size selector switch in "30" position.
 - S306 : Record detector switch.
 - The voltage value and waveform are the standard values (stop mode) of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Therefore, the voltage value and waveform may include some error due to the internal impedance of the tester or the measuring unit.
 - () is the voltage when turntable is in rotation.
 - () is the voltage when tonearm is in lead-in mode.
 - () is the voltage when tonearm is in return mode.
 - Positive voltage lines.
 - Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

Caution!
 IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table
- Do not touch the legs of IC or LSI with the fingers directly.

• Terminal guide of transistors and IC's.

EXPLODED VIEW



A	2	1							23	15-1	11	15	12	14		13		18	19	20	21	18	22																				
B	8	7	28	4	3		2	47	26	5	45	24	27	42	46	30	25	41	48	44	29	51	50		32	16	34	9	31	10	33	53	54	9	35	36		39	38	40	37		
C	6	7		8			8	7			43	8	7	49		57	56		55	52		72	68	58	67	66	71	65	70									63	61	64	59	62	60

REPLACEMENT PARTS LIST (Mechanical parts)

Notes:

- Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
- Important safety notice:
Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
- $\text{\textcircled{C}}$ -marked parts are used for black type only. While $\text{\textcircled{O}}$ -marked parts are for silver type only.
- Parts other than $\text{\textcircled{C}}$ -and $\text{\textcircled{O}}$ -marked are used for both black and silver types.
- Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.
- The " $\text{\textcircled{S}}$ " 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.

Ref. No.	Part. No.	Description	Ref. No.	Part. No.	Description	Ref. No.	Part. No.	Description
CABINET, CHASSIS AND TONEARM PARTS			30	SFUMJ11N02	Holder (2)	N13	XTW26+10GFZ	Screw, $\text{\textcircled{S}}$ 2.6 \times 10 (2)
1	SGDB30	Dust Cover (1)	31	SMILL20-KM	Motor Ass'y, Turntable (1)	N14	XTN3+6B	Screw, $\text{\textcircled{S}}$ 3 \times 6 (1)
2	SFGZJ02N01	Cushion Rubber (2)	32	SHGB1	Cover (1)	N15	SFPEVOQ601	Screw (1)
3	SHOB2	Turntable Mat (1)	33	WFCLC20EG1	Lead Wire (1)	N16	XTN2+6JFZ	Screw, $\text{\textcircled{S}}$ 2 \times 6 (1)
4	SDOB2	Turntable Platter (1)	34	SWKBL20041	Lead Wire Ass'y (1)	N17	XYN3+F8S	Screw, $\text{\textcircled{S}}$ 3 \times 8 (1)
5	SFGBZ15R01	Belt (1)	35	SBDB4	Knob (2)	N18	XTN2+12J	Screw, $\text{\textcircled{S}}$ 2 \times 12 (1)
6	SKUB2	Bottom Board (1)	36	$\text{\textcircled{O}}$ SBCB10-1S	Button (1)	N19	XYE3+EG8	Screw, $\text{\textcircled{S}}$ 3 \times 8 (1)
7	SFQCC05N01	Spring (4)	36	$\text{\textcircled{C}}$ SBCB10-0C	Button (1)	N20	XTV3+8J	Screw, $\text{\textcircled{S}}$ 3 \times 8 (1)
8	SFGAJ02N01	Insulator (4)	37	SFDJJ11N03E	Terminal (1)	ACCESSORIES		
9 [XA]	SFGCQ06X01	Cushion Rubber (2)	38	SFTUN05N02E	Shaft (1)	A1 [EK]	SQUB11	Instruction Book (1)
9 [other]	SFGCQ06N02	Cushion Rubber (2)	39	SFYB-5-32	Ball (1)	A1 [EG]	SQUB7	Instruction Book (1)
10 [XA]	SFGCJ01X09	Cushion Rubber (1)	40	SFUKJ01N02E	Stator Frame (1)	A1 [Ei]	SQUB22	Instruction Book (1)
10 [other]	SFGZJ01X01	Cushion Rubber (1)	41	SFUMJ11N06	Spacer (1)	A1	SQUB23	Instruction Book (1)
11	$\text{\textcircled{O}}$ SKMB60-0S	Cover (1)	42	SUWB2E	Bracket, Worm Gear (1)	[PA, PE, PC]		
11	$\text{\textcircled{C}}$ SKMB60-0K	Cover (1)	43	SFUMJ02N12	Support, Worm Gear (1)	A1 [other]	SQUB10	Instruction Book (1)
12	Δ SFDJHSC0516	AC Socket (1)	44	SFUMJ11N09A	Worm Gear (1)	A2	SFDHEQ1N01	Output Cord (1)
13	$\text{\textcircled{O}}$ SKMB90-0S	Holder (1)	45	SMNLL20-KM	Motor Ass'y, Tonearm (1)	A3	SFDLJ11N01E	Ground Wire (1)
13	$\text{\textcircled{C}}$ SKMB90-0K	Holder (1)	46	SHGB2	Rubber (1)	A4 [EK]	Δ SFDAC05G02	AC Cord (1)
14	SJJ130	Jack (1)	47	SHGB3	Cover (1)	A4	Δ SJA168-1	AC Cord (1)
15	$\text{\textcircled{O}}$ SKMB50E0S	Cabinet (1)	48	SFGBC10-01	Belt (1)	[XA, XM, PA, PE, PC]		
15	$\text{\textcircled{C}}$ SKMB50E0K	Cabinet (1)	49	SFUML11R03	Wheel (1)	A4 [XL]	Δ SJA163	AC Cord (1)
15-1	$\text{\textcircled{O}}$ SGB628	Badge (1)	50	SFGCQ06N01	Cushion Rubber (1)	A4 [other]	Δ SFDAC05E02	AC Cord (1)
15-1	$\text{\textcircled{C}}$ SGB628-1	Badge (1)	51	SFUMQ05N01	Spring (1)	A5	Δ SJP9215	Adaptor (1)
16	SGXB10-00A	Ornament Plate (1)	52	SFSP00302	Spring (2)	[XA, XM, PA, PE, PC] only		
17	SGKB10	Label (1)	53	SFPGML1101	Rubber (1)	PACKING PARTS		
18	SBHB1	Hinge (2)	54	SFDZJ11N02E	Solenoid Ass'y (1)	P1	$\text{\textcircled{O}}$ SPGB17	Carton Box (1)
19	$\text{\textcircled{O}}$ SKMB70-0S	Cover (1)	55	SFBB5E	Arm Base (1)	[EF]		
19	$\text{\textcircled{C}}$ SKMB70-0K	Cover (1)	56	SUXB2	Guide Rail (1)	P1	$\text{\textcircled{O}}$ SPGB16	Carton Box (1)
20	$\text{\textcircled{O}}$ SFGKL11R01	Rubber Cap (1)	57	STZB3E	Rope Ass'y (1)	[other]		
20	$\text{\textcircled{C}}$ SFGKL11M41	Rubber Cap (1)	58	SFGCC05N05	Cushion Rubber (1)	P1	$\text{\textcircled{C}}$ SPGB15	Carton Box (1)
21	$\text{\textcircled{O}}$ SFGK170-01	Rubber Cap (1)	59	SUWB1E	Base, Guide Rail (1)	[EF]		
21	$\text{\textcircled{C}}$ SFGK171F01	Rubber Cap (1)	60	SHRB5	Cam (1)	P1	$\text{\textcircled{C}}$ SPGB2	Carton Box (1)
22 [E]	SGTB20	Name Plate (1)	61	SHRB1	Lever (1)	[other]		
[EK, XL]	SGTB21	Name Plate (1)	62	SFXW130-01	Clip (1)	P2	SPSB1	Pad, Front (1)
22 [EG]	SGTB2	Name Plate (1)	63	SFUMC06N11	Pulley (1)	P3	SPSB2	Pad, Rear (1)
22	SGTB3	Name Plate (1)	64	SFUMC05N22	Cap (1)	P4	SFHKNO5N01	Clamper, Turntable Platter (2)
[XA, XM]			65	SFAB3E	Tonearm (1)	P5	SFHLK11R01	Clamper, Armbase (1)
22	SGTB25	Name Plate (1)	66	EPC-P30S	★ Cartridge (1)	P6	SFHDL11R23	Sheet (1)
[PA, PE, PC]			67	EPS-30CS	★ Stylus (1)	P7	SFYH17 \times 16	Polyethylene Bag, Cord (1)
22 [other]	SGTB23	Name Plate (1)	68	SFCNC05101	Cover (1)	P8	SFYF05A06	Polyethylene Bag, Rubber Cap (1)
23	SFUMC02N33	Lever (1)	69	SFEB1	Bracket, Tonearm (1)	P9	SFYH60 \times 60	Polyethylene Bag, Unit (1)
24	SFGCC02N03	Rubber Cap (1)	70	SFBB6	Arm Support (1)	P10	SFHSC06N01	Spacer, Dust Cover (1)
25	SFUMC02N35	Holder (1)	71	SFBB11E	Arm Support (1)	P11	SFYF43D41	Sheet (1)
26	SFWEN05N01	45 rpm Adaptor (1)	72	SUWB3	Arm Stopper (1)	P12	SFHDD05N01	Pad, Turntable Mat (1)
27	SFQAN05N01	Spring (1)	SCREWS, WASHERS AND NUTS			P13	SFYF32B35	Polyethylene Bag, Turntable Mat (1)
28	SFUMC05N11A	Record Detector Plate (1)	N1	XTW3+14QFYR	Screw, $\text{\textcircled{S}}$ 3 \times 14 (5)			
29	$\text{\textcircled{O}}$ SBC666	Button, Power (1)	N2	XTV3+10G	Screw, $\text{\textcircled{S}}$ 3 \times 10 (13)			
29	$\text{\textcircled{C}}$ SBCB20	Button, Power (1)	N3	SFPEWQ3201	Washer (2)			
			N4	XTN3+6JFZ	Screw, $\text{\textcircled{S}}$ 3 \times 6 (1)			
			N5	XTV3+6J	Screw, $\text{\textcircled{S}}$ 3 \times 6 (1)			
			N6	XTV3+20G	Screw, $\text{\textcircled{S}}$ 3 \times 20 (1)			
			N7	XWE3A8BW	Washer (1)			
			N8	GTW-3	Washer (1)			
			N9	SFPTN00301	Screw (1)			
			N10	SFXN623-1	Nut (1)			
			N11	XTN3+16J	Screw, $\text{\textcircled{S}}$ 3 \times 16 (1)			
			N12	XTV3+6G	Screw, $\text{\textcircled{S}}$ 3 \times 6 (3)			