

Service Manual

QUARTZ Synthesizer Direct

Drive Turntable System

SL-1500MK2 (M, MC)



- The model SL-1500MK2 (M) is available in America only.
- The model SL-1500MK2 (MC) is available in Canada only.

SPECIFICATIONS (Specifications are subject to change without notice for further improvement)

General		Rumble	-50 dB (DIN 45539A) -73 dB (DIN 45539B)
Power supply	AC 120 V, 50 or 60 Hz	Tonearm section	
Power consumption	12 W	Type	Gimbal suspended universal "S" shaped tubular arm, static-balanced type
Dimensions (H x W x D)	14.5 x 45.3 x 38.4 cm (5-45/64 x 17-45/64 x 15-7/64 inches)	Effective length	230 mm (9-1/16")
Weight	11.8 kg (26.0 lb)	Overhang	15 mm (19/32")
Turntable section		Tracking error angle	+3° at the outer groove of 30 cm (12") record +1° at the inner groove of 30 cm (12") record
Type	Quartz-phase-locked control direct drive turntable with quartz synthesizer pitch control, Manual play	Offset angle	21.5°
Drive method	Direct Drive	Friction	Less than 7 mg (lateral, vertical)
Motor	Brushless DC motor	Effective mass	22 g (with a cartridge weighting 6 g at 1.25 g stylus pressure)
Drive control method	Quartz-phase-locked control	Tonearm height adjustment	In 1mm steps to a range of 6 mm
Turntable platter	Aluminum die-cast, diameter 33 cm (13"), weight 2.5 kg (5.5 lb.)	Adjustable stylus pressure range	0 ~ 3 g
Moment of inertia	340 kg-cm ² (116 lb-in ²)	Cartridge weight range	5-11 g
Turntable speeds	33-1/3 and 45 r.p.m.	Cartridge mounting dimensions	12.7 mm (1/2") mounting space
Turntable speed fine adjustment	Adjustable up to ±9.9% in 0.1% increments by digital indication	Headshell terminal lug	1.2 mm, for 4-pin terminal
Starting torque	1.5 kg-cm (1.3 lb-in)	Headshell weight	9.5 g
Build-up characteristics	90° or 1/4 rotation to 33-1/3 rpm		
Braking system	Electronic brake		
Speed fluctuation due to load torque	0% within 1.5 kg-cm (1.3 lb-in)		
Speed drift	Within 0.002%		
Wow and flutter	0.025% WRMS (JIS C5521) ±0.035% weighted zero to peak (DIN 45507)		

Weights and dimensions shown are approximate.

Technics
by Panasonic

Panasonic Company
Division of Matsushita Electric
Corporation of America
One Panasonic Way, Secaucus,
New Jersey 07094

Matsushita Electric of Hawaii, Inc.
320 Waiakamilo Road, Honolulu,
Hawaii 96817

Matsushita Electric of Canada Ltd.
40 Ronson Drive, Rexdale,
Ontario, Canada M9W 1B5

■ FEATURES

Encounter two separate isolation stages. The first stage effectively damps out harmful external vibrations which may reach the unit through its resting surface. The all-important turntable, motor and tonearm assembly are then supported on a second isolation system. These isolators are specially designed with material and springs of calculated, finely-tuned elasticity to absorb external vibrations.

Isolation from feedback lets you enjoy clear, transparent sound even at high volume levels.

Technics' unique motor construction in which the rotor of the motor is integrally formed with the turntable.

High torque motor delivering 1.5kg-cm makes it possible to reach 33-1/3 r.p.m. from standstill within 0.7 sec. (1/4 rotation) and to effect instantaneous speed change. (Fig. 1).

Superior load characteristic of 0 rotational deviation even at a stylus pressure of 300 g. (Fig. 2).

High performance with wow and flutter of only 0.025% (JIS C5521) and rumble of -73 dB (DIN 45539B).

Since the development of the DD turntable, Technics has continually strived for further improvement of player performance and has introduced numerous high performance models on the market.

The SL-1500MK2 series is brought into being by combination of experience and research.

The characteristic values of rumble -73 dB (DIN 45539B) and wow and flutter of 0.025% (W.R.M.S JIS C5521) by far exceed the standards to which record albums are made.

Quartz Controlled Rotation Accuracy

The SL-1500MK2 utilizes the oscillation of a quartz crystal as a reference signal or source. This oscillation is not affected by temperature change or power fluctuations. By synchronizing the rotation of the turntable platter accurately to the reference signal, speed drift of the SL-1500MK2 is held within $\pm 0.002\%$. This means that for a record with a playing time of 30 min, total playing time variation can amount to no more than 0.036 sec. This stable and accurate rotation sets a new standard of precision.

The accuracy under controlled operating conditions as in a listening room is about $\pm 0.00001\%$ as shown in Fig. 3.

Highly sensitive universal tonearm.

For the finest tracking sensitivity, the tonearm rests in a gimbal suspension equipped with two pairs of low friction pivot bearings. Gimbal suspension and low tonearm mass means that accurate tracking is possible at tracking forces as low as 0.25 grams. With enhanced rotational sensitivity of 7 mg. the tonearm is allowed free, gyroscopic movement to ensure flawless balance during tracking. The longer-than-usual effective tonearm length (9-1/16" or 230 mm, stylus to pivot) contributes to the arm's low tracking error, and this in turn facilitates the design of the anti-skating control for precise and reliable tracking. With this design, a single precise anti-skating scale counteracts side thrust for all types of styli.

Arm height is adjustable within a range of 6 mm to accommodate varying cartridge dimensions.

Resonance dampened headshell with unique overhang adjuster.

Low capacitance phonocables.

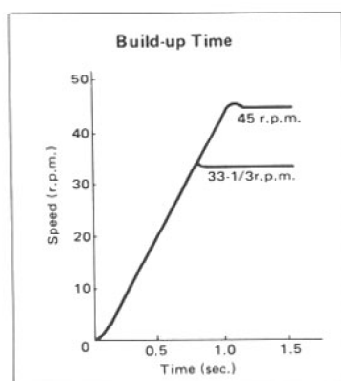


Fig. 1

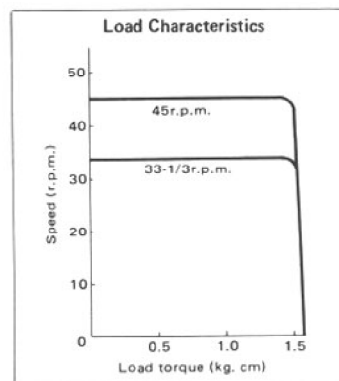


Fig. 2

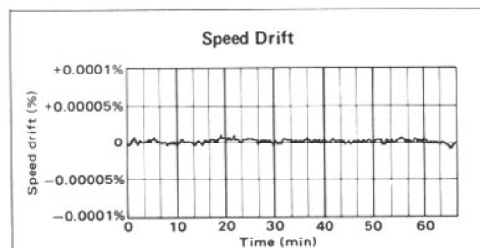


Fig. 3

■ CROSS SECTION OF MOTOR PORTION AND DOUBLE INSULATOR

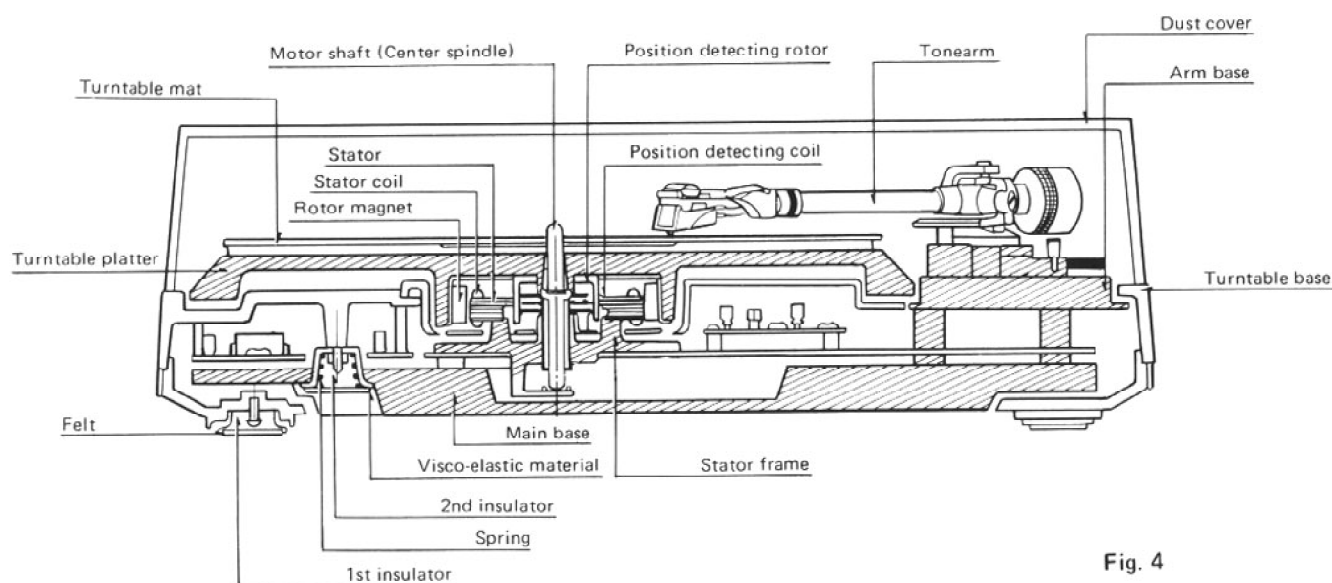


Fig. 4

■ PARTS IDENTIFICATION

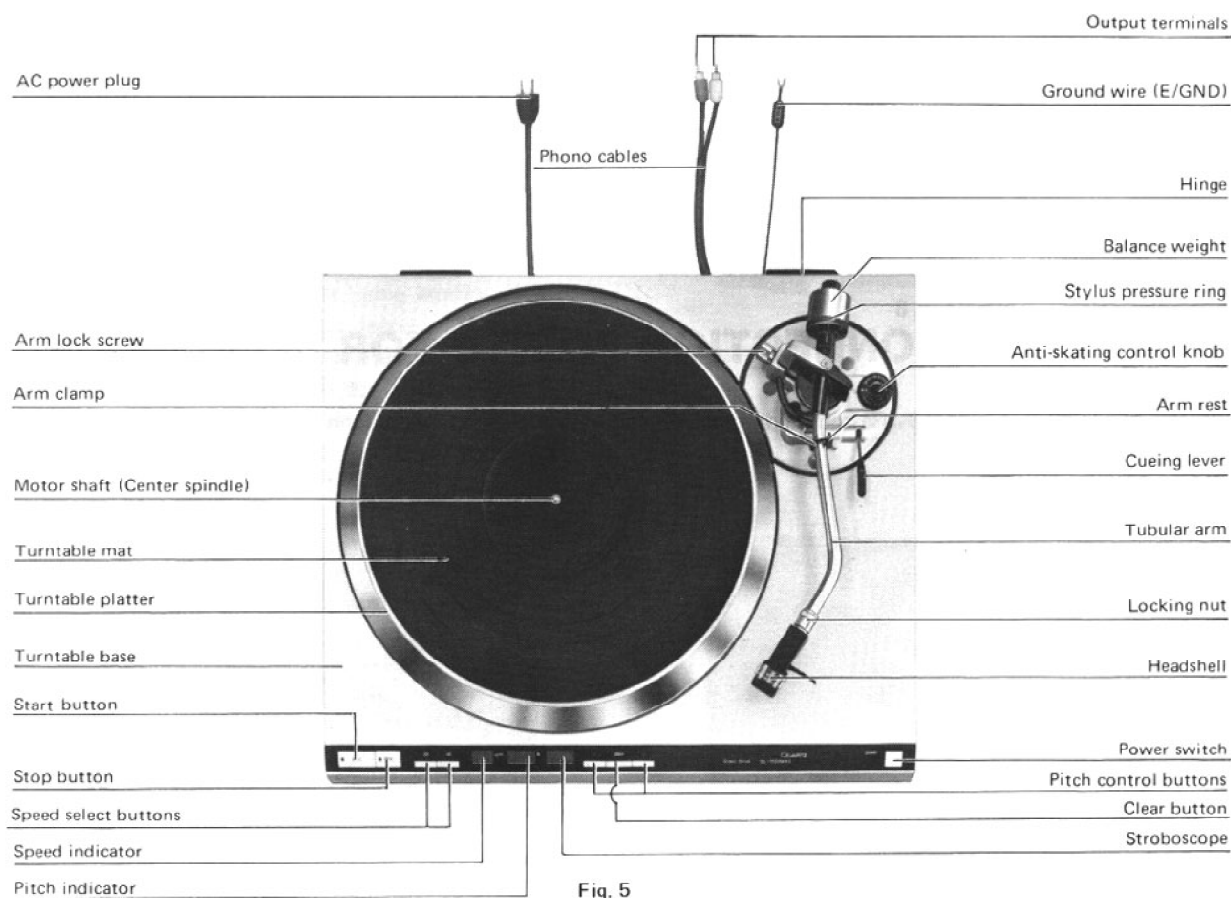


Fig. 5

■ TO REMOVE CABINET AND BOTTOM COVER

1. Remove headshell and balance weight.
2. Clamp tone arm to the arm rest.
3. Remove turntable platter.
4. Close dust cover.
5. Turn unit upside down taking special care not to damage or scratch the dust cover.
6. Remove the 7 screws from bottom cabinet (Fig. 6).
7. Remove the 4 screws from main base (Fig. 7).
8. Holding the player firmly with both hands, to prevent separation of upper section (turntable base) from lower section (main base), turn it carefully upwards.
9. Remove dust cover.
10. Remove the 6 screws from the panel cover (Fig. 8).
11. Unplug the 2 plug-in connectors and 1 cord clamp (Fig. 9).
12. To remove the turntable base from the main base bottom section, turn cueing lever upward (cueing position) and move tone arm towards center of spindle. Top section can be lifted up easily.
13. To reassemble, perform steps 1 through 12 in reverse.

Note:

The turntable horizontally to the panel face is already adjusted before shipment.
If deviated, correct it by means of the adjust screws using a 5 mm box spanner.

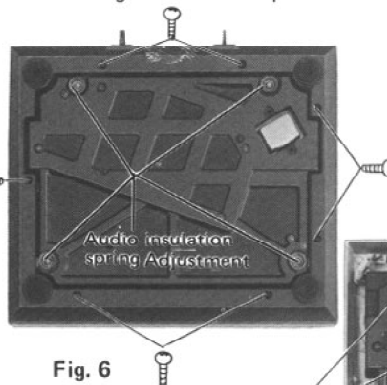


Fig. 6

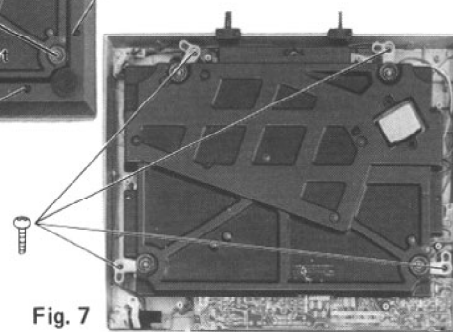


Fig. 7

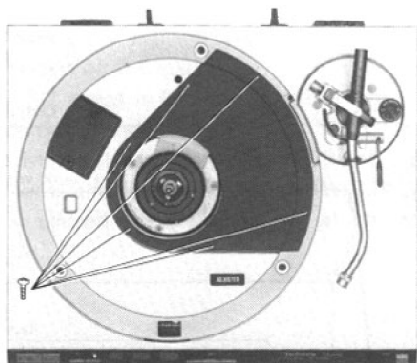


Fig. 8

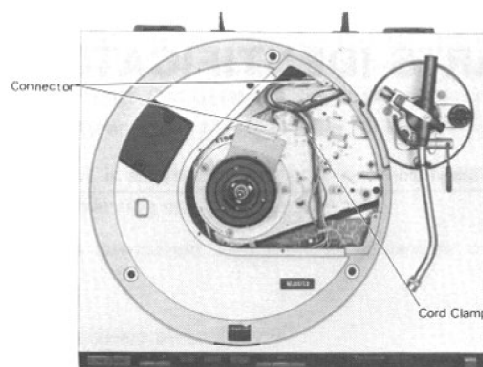


Fig. 9

■ CONNECTOR CONNECTION POINTS FOR INSPECTION

Connect the disassembled main unit and main base as shown in the Figure below.

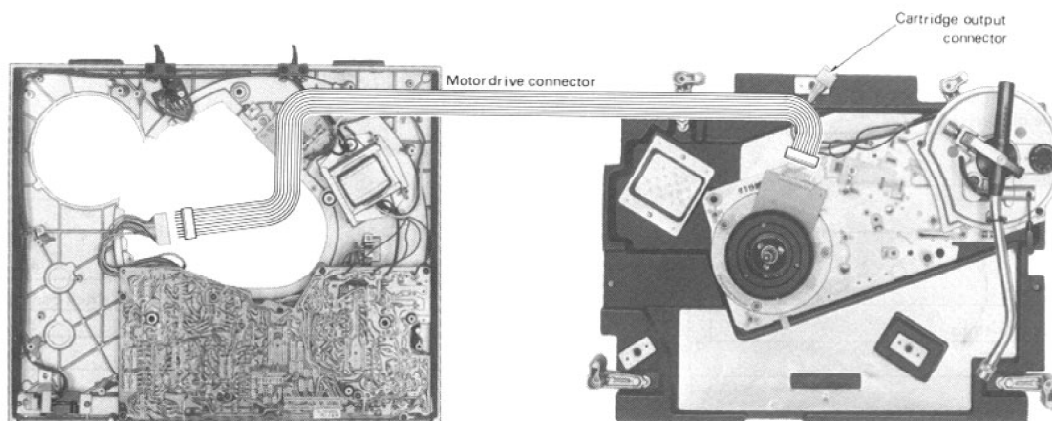


Fig. 10

■ ADJUSTMENTS-1

Adjustment of the arm height. (See Fig. 11, 12)

- This tonearm has been locked in the highest position before shipping from the factory, adjust the arm height according to your cartridge height.
- Loosen the arm lock screw. And push the arm pivot bearing support downward until the tonearm is parallel with the record surface.

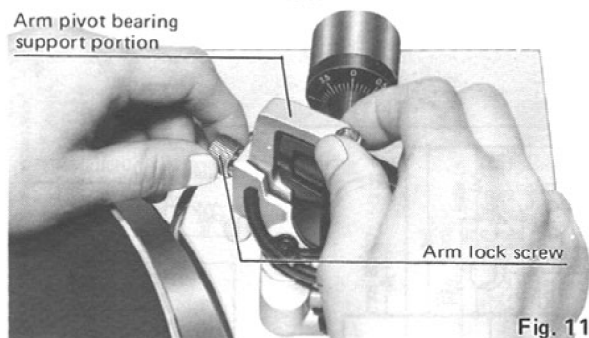


Fig. 11

- If the cartridge height is 18 mm as shown in figure 11, align the fourth line ("18") on the gimbal support portion with the arm base edge as shown in the picture. (See Fig. 12)
The arm height can be adjusted in 1 mm steps over a range of 6 mm.

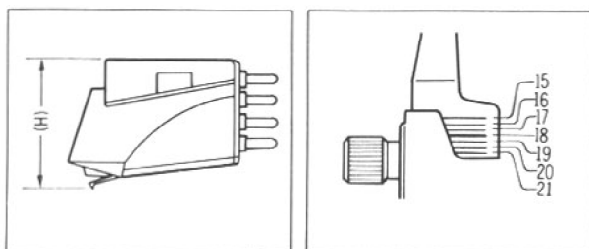


Fig. 12

Pitch control (turntable speed fine adjustment)

The Quartz Synthesizer system is being employed for the first time in the world. A high degree of pitch control accuracy over a wide range ($\pm 9.9\%$) in 0.1% increments can be obtained, with the quartz perfectly locked. The pitch variations which are clearly indicated by the LED digital indicator provide you with accurate and easy selection.

- The pitch control can be selected in increments of 0.1% which is below the threshold of human perception. This function can be very effective for minor extension of reduction of broadcasting time in professional applications.
- The pitch control also enables you to accurately and precisely tune musical instruments, and by varying the pitch slightly to obtain a musical note from phono discs.

For a half-tone change:

- +5.9% (#)
- 5.6% (b)

- Another feature of the variable pitch control over a wide range of $\pm 9.9\%$ is that it makes singing along with a melody easy for a chorus or playing a phono disc for accompaniment only.

By pressing the clear button which is located between the "+" and "-" pitch buttons, you can quickly return the set to normal playing speed.

Adjustment of the muting time and arm height.

(See Fig. 13 and 14)

This unit employs "muting switch" combination with arm lift to cut off the irritating noise when the stylus is set down on or lifted up from the record. You can adjust the muting time by adjusting the arm lift height (distance between the stylus tip and record surface when cueing lever is raised).

If the clearance becomes too narrow or too wide because of the physical size of the different cartridge on the market, turn the adjustment screw clockwise or counterclockwise, while pushing the arm lift down.

If the noise is heard

Adjust the arm lift height adjustment screw clockwise to reduce the distance between the record and stylus tip.

If the sound is not heard even after the stylus tip sets down on the recorded groove

Adjust the screw counterclockwise to increase the distance.

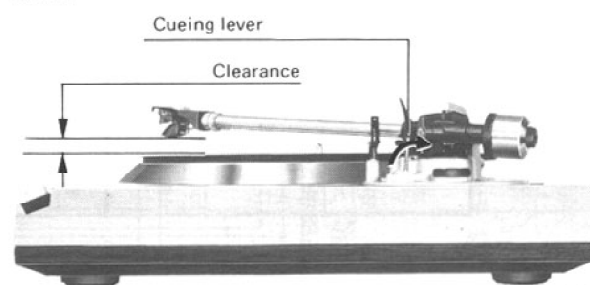


Fig. 13

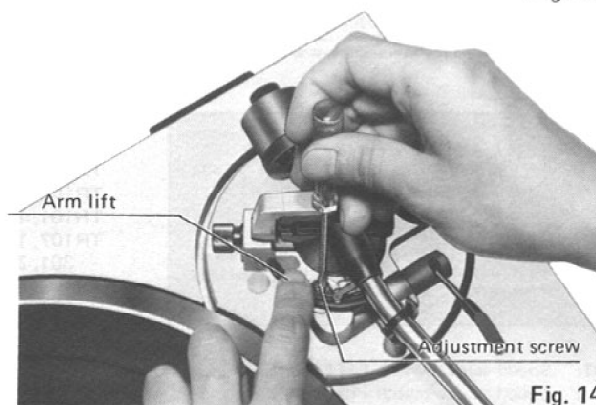


Fig. 14

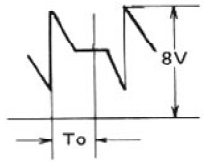
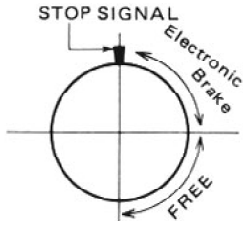
Note:

As the adjusting screw has a hexagon head, be sure to make the adjustment while depressing the arm lift, and be sure that the hexagon head retract correctly into the arm lift when released.

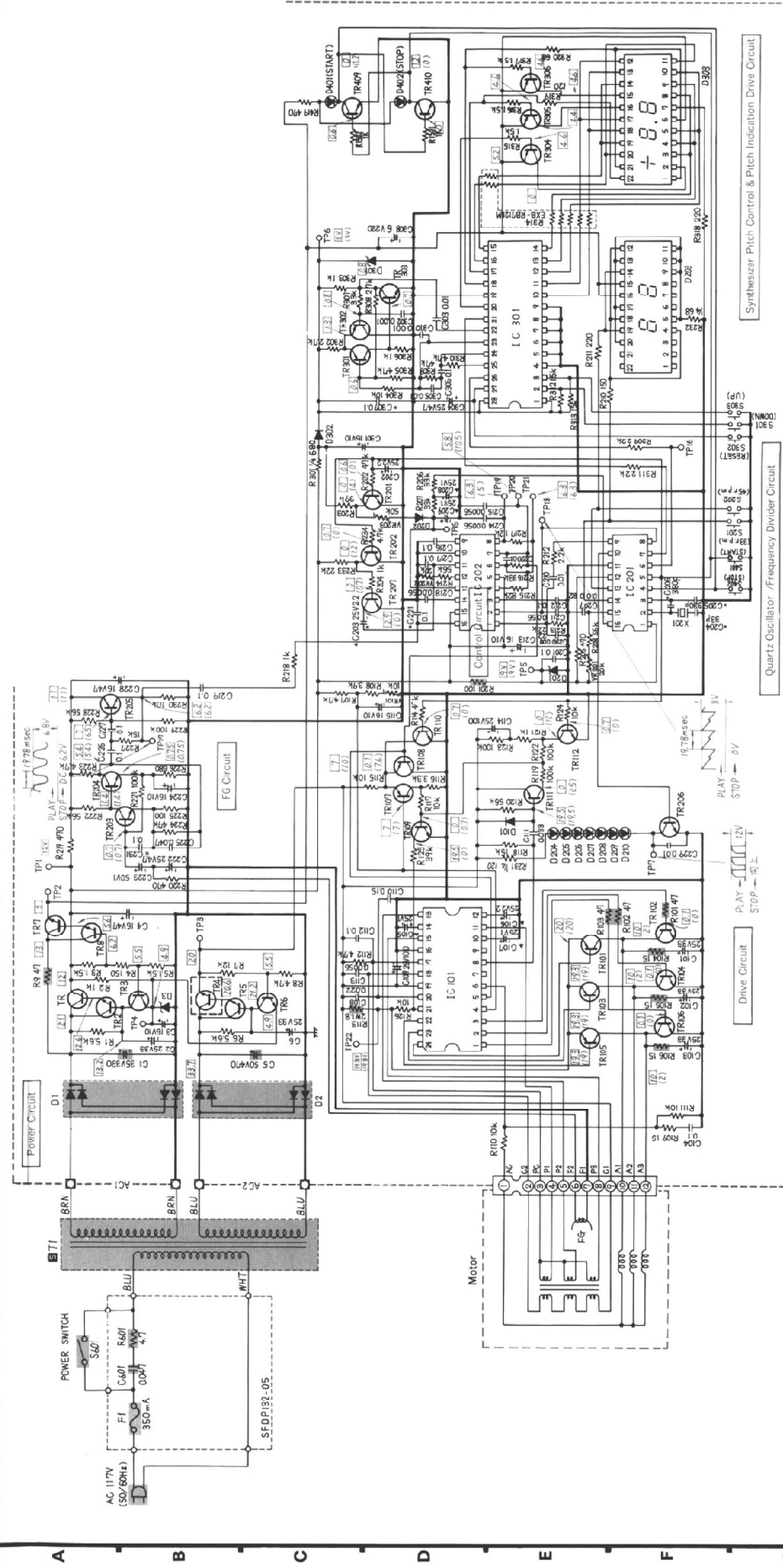
■ ADJUSTMENTS-2

Adjustment Points of Electrical System

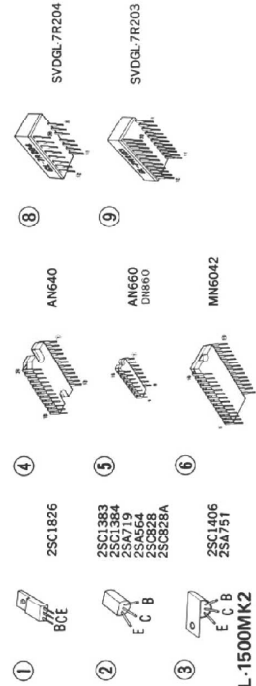
NOTE: Make the following adjustments after replacing parts such as IC's, transistors, diodes, etc.

	Adjustment	Connection Points	Adjustment Point	Adjustment Method
A	Adjustment of standard voltage (VS)	DC voltmeter or Oscilloscope ⊕ → TP15 ⊖ → GROUND	VR201	Turn start switch on to begin turntable rotation. For 33 rpm . . . adjust VR201 for DC 2.10V ±0.05V. For 45 rpm . . . confirm that there is DC 2.80 ~ 2.86V.
B	Adjustment of current source (IR)	DC voltmeter or Oscilloscope ⊕ → TP19 ⊖ → TP21	VR202	Turn start switch on to begin turntable rotation. Adjust VR202 for 0V potential difference of TP19 and TP21.
C	Tracking adjustment	Oscilloscope ⊕ → TP18 ⊖ → GROUND	VR101	TP18 waveform  For 33 rpm . . . adjust VR101 for $8 \leq T_o \leq 8.5$ ms. For 45 rpm . . . confirm that $5.8 \leq T_o \leq 6.4$ ms.
D	Braking adjustment	—	VR203	 Adjust VR203 for complete stop within 90° ~ 180° after stop signal initiated. (Turntable becomes free a few seconds after stop.)

Schematic Diagram Model SL-1500MK2 (This schematic diagram may be modified at any time with the development of new technology.)

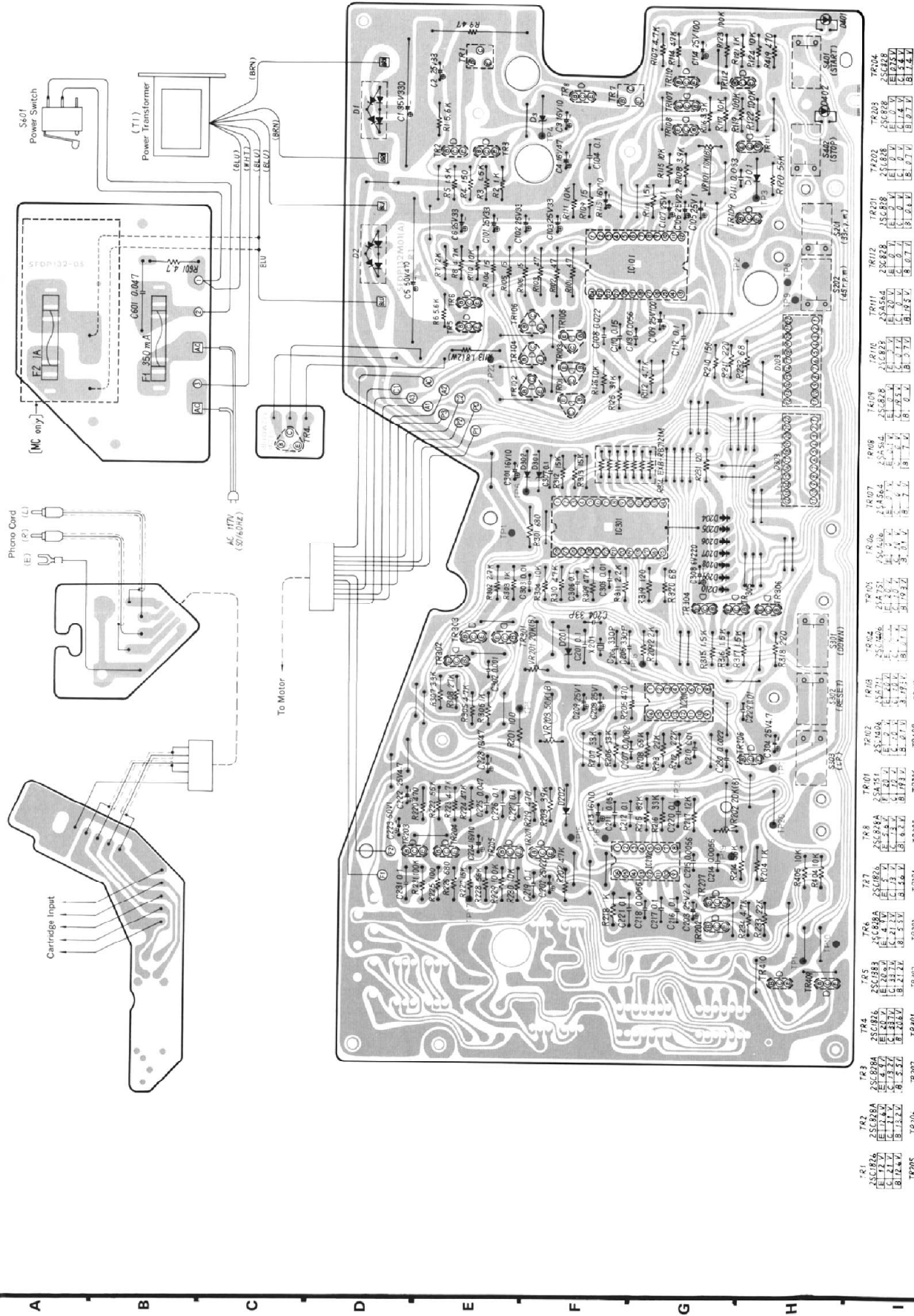


■ TERMINAL GUIDE

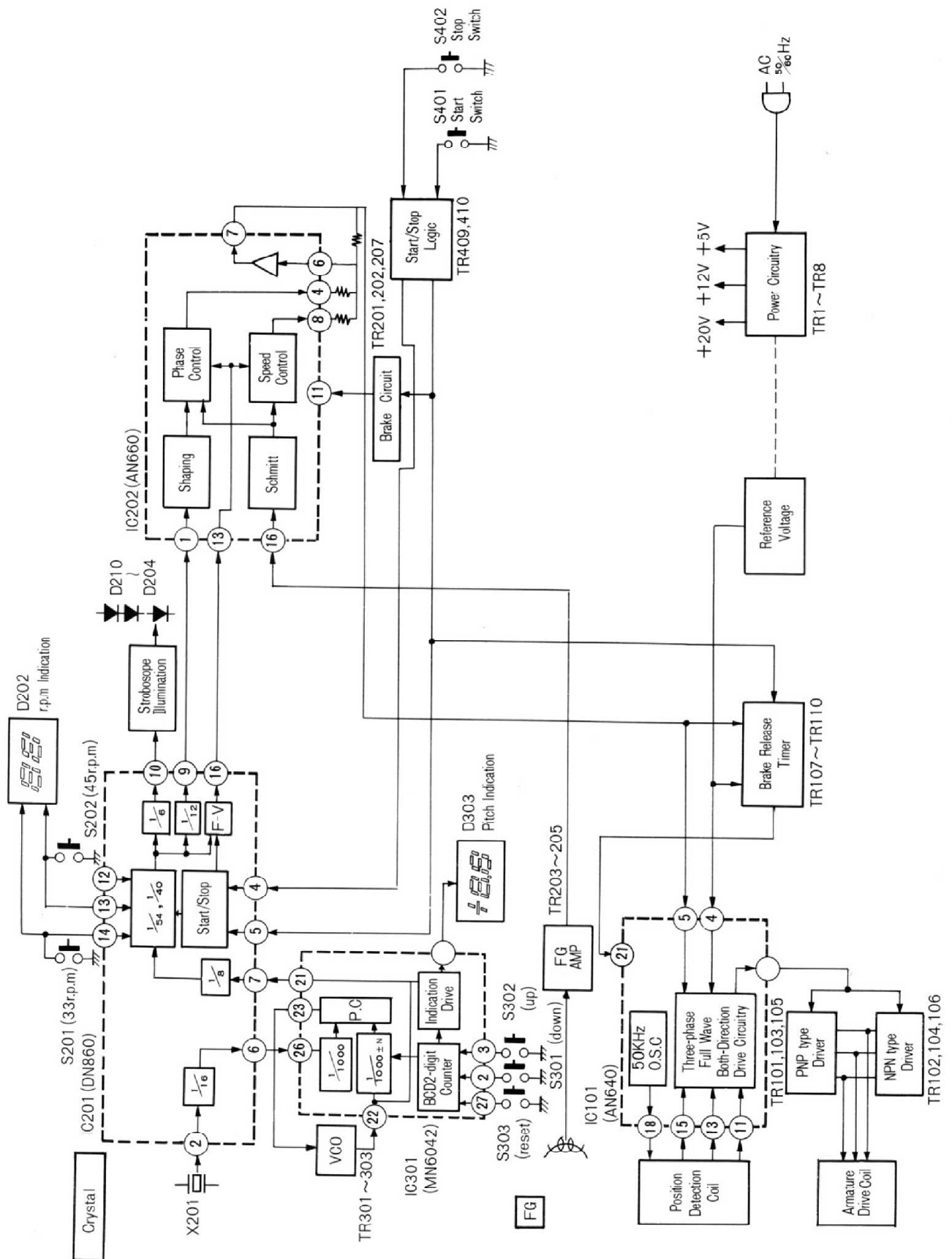


Printed Circuit Board SL-1500MK2

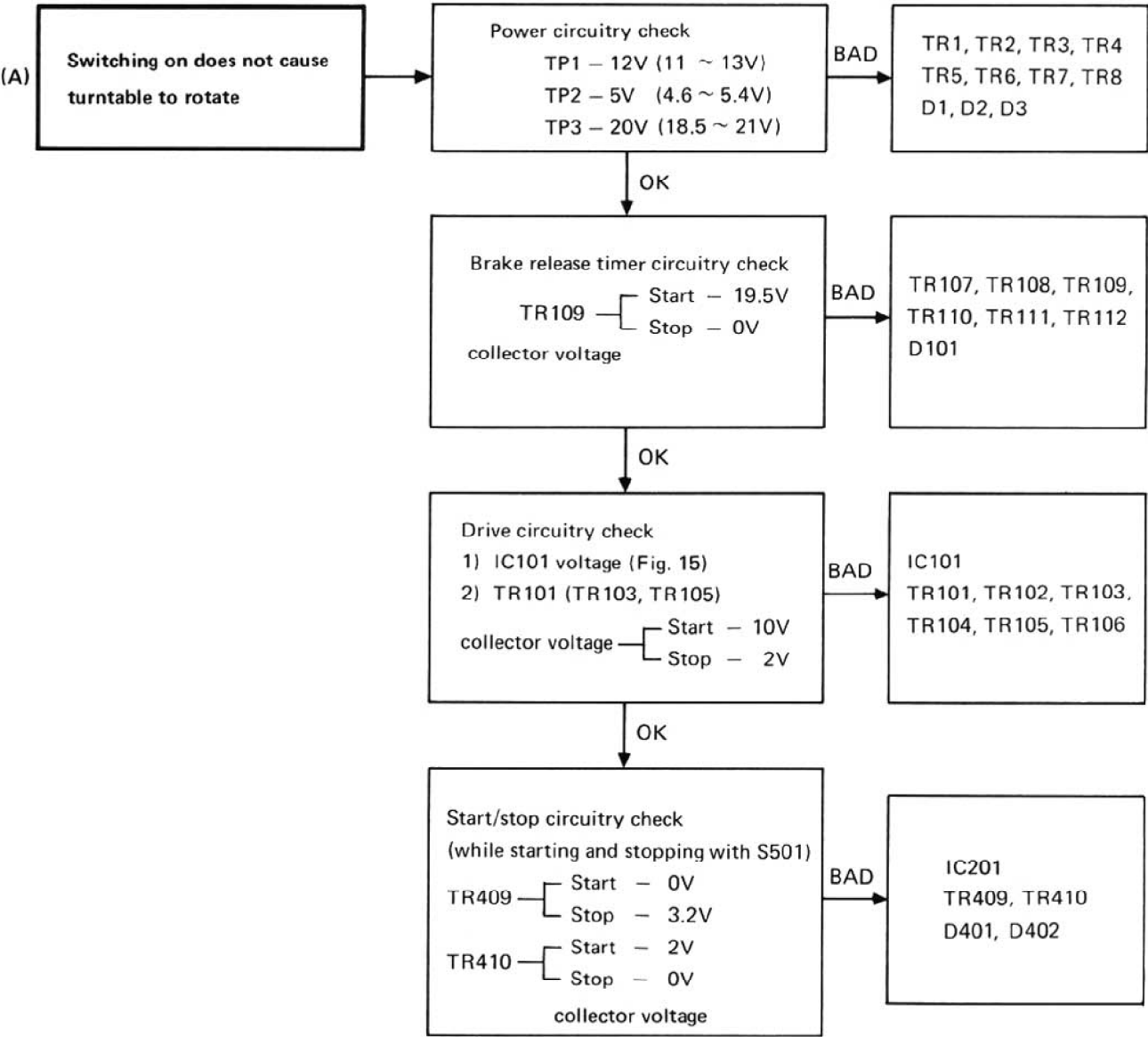
1 2 3 4 5 6 7 8 9 10 11 12



■ BLOCK DIAGRAM



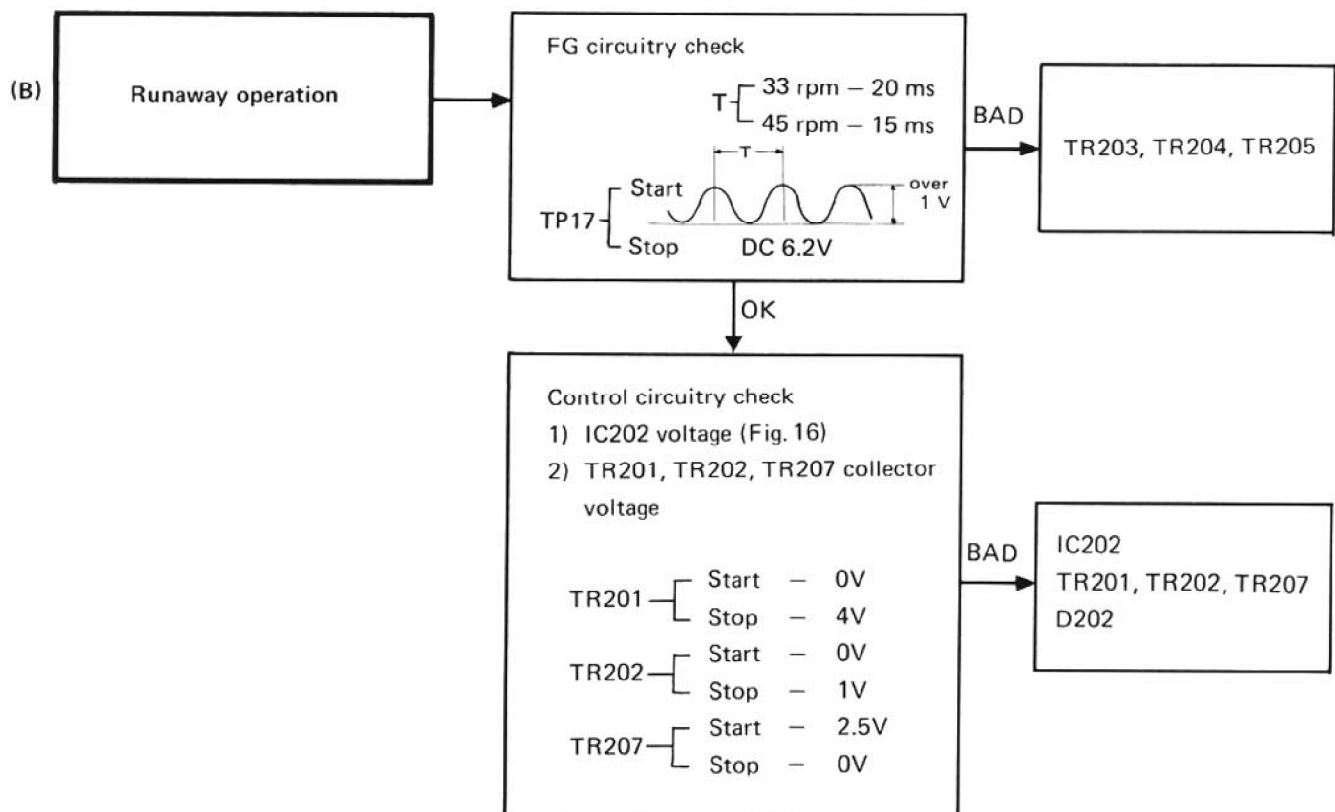
■ TROUBLE SHOOTING



Reference voltage of each pin of IC101

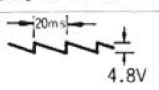
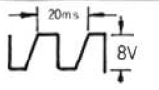
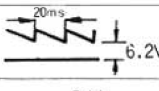
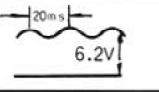
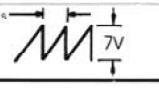
(Fig. 15)

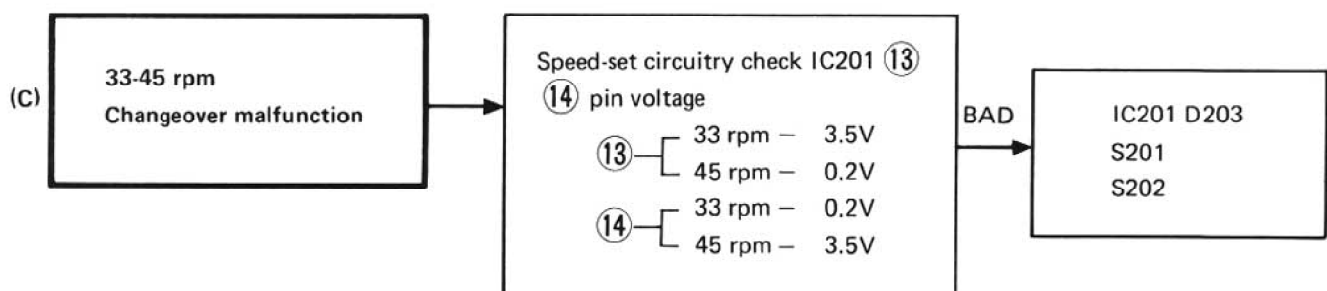
	Start	Stop		Start	Stop		Start	Stop
①		0.1 V	⑩		15.2 V	⑰	15.5 V	15.5 V
②			⑪			⑱		Same as at left
③			⑬			⑲		
④	5.8 V	6.1 V	⑮	15.6 V	Same as at left	⑲	20.6 V	20.6 V
⑤	5.9 V	10.5 V	⑫	14.9 V		⑳	15.3 V	1.4 V
⑥	4.7 V	2.2 V	⑭	14.9 V		㉑	20.5 V	16.4 V
⑦	4.9 V	4.9 V	⑯	14.9 V	15 V	㉒	20 V	20 V
⑧	20.5 V	20.5 V	⑰	0 V	0 V	㉓		
⑨		0.2 V	⑱	0 V	0 V	㉔		

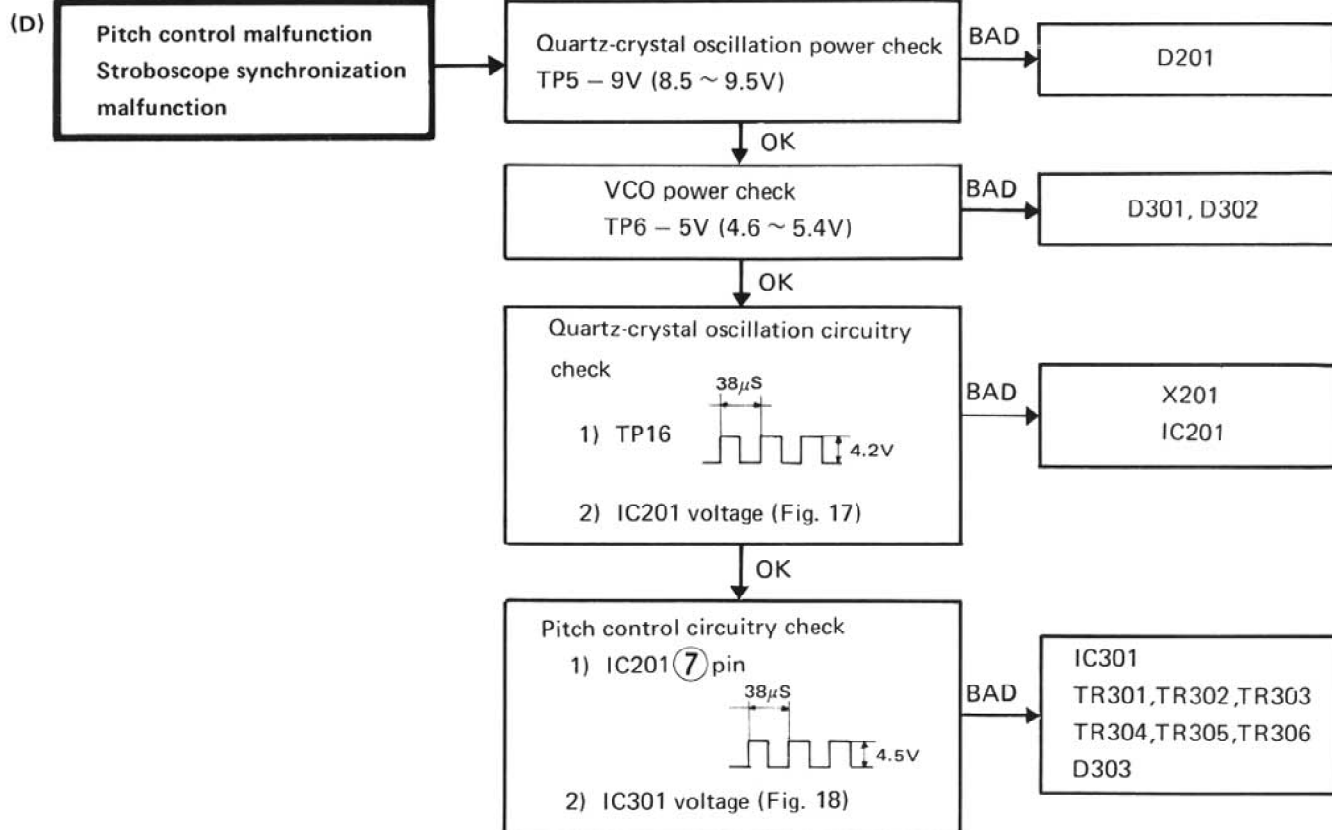


Reference voltage of each pin of IC202

(Fig. 16)

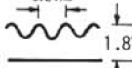
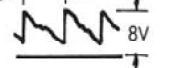
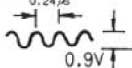
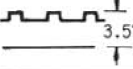
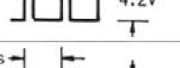
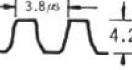
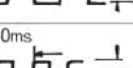
	Start	Stop		Start	Stop		Start	Stop
①		0 V	⑥	6.3V	6.3V	⑫	2.1V	2.7V
②	Same at TP18	0 V	⑦	5.8V	10.5V	⑬	2.1V	2.7V
③		6.1V	⑧	6.3V	5.0V	⑭		7.5V
④	6.6V	6.2V	⑨		7.1V	⑮	11.7V	11.7V
⑤	11.7V	11.7V	⑩	0 V	0 V	⑯		5.5V
			⑪		7.5V	⑰		





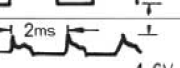
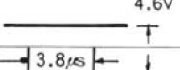
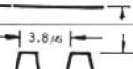
Reference voltage of each pin of IC201

(Fig. 17)

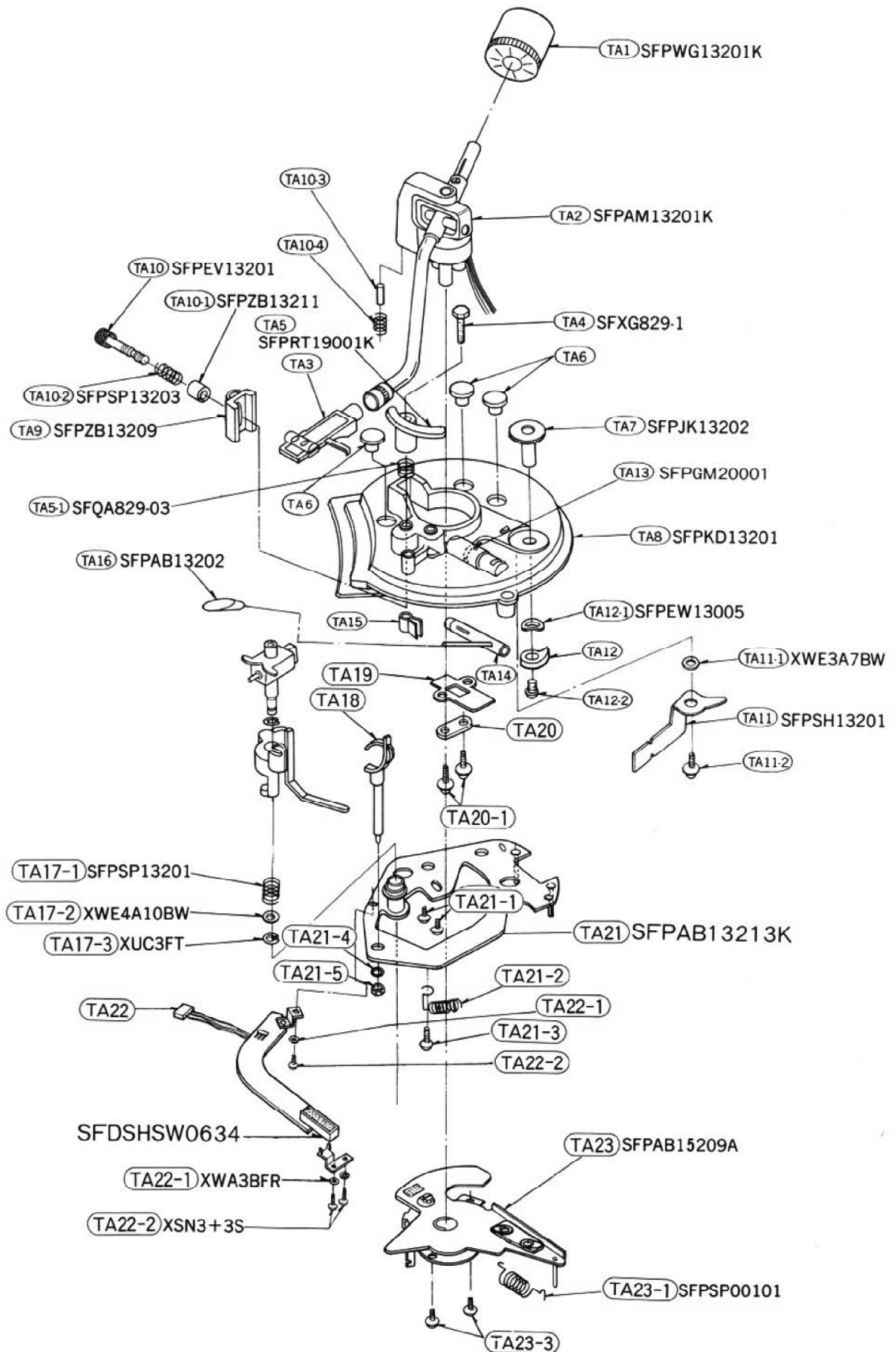
	Start	Stop		Start	Stop		Start	Stop
①	9.4V	9.4V	⑦		Same as at left	⑪	0V	0V
②		Same as at left	⑧		0V	⑫	6V	6V
③		Same as at left	⑨		4.3V	⑬		Same as at left
④	0V	3.2V	⑩		Same as at left	⑭	0.2V	0.2V
⑤	2.0V	0V				⑮		Same as at left
⑥		Same as at left				⑯		0V

Reference voltage of each pin of IC301

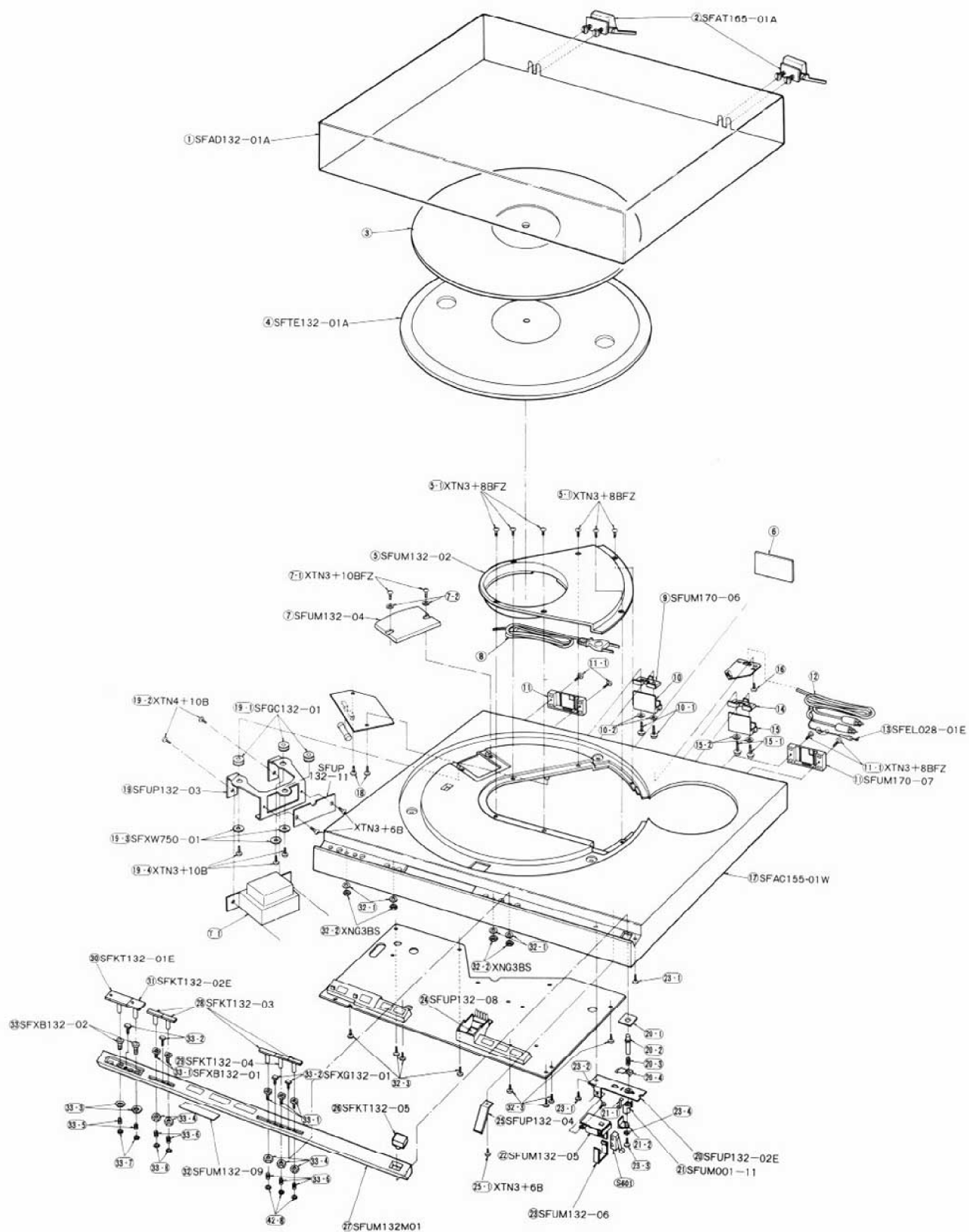
(Fig. 18)

	Start	Stop		Start	Stop		Start	Stop
①	4.9V	4.9V	⑰		Same as at left	⑳	2.4V	Same as at left
②			⑱		Same as at left	㉑	2.4V	Same as at left
③			㉒		Same as at left	㉒		Same as at left
④ ⑧	0V	0V	㉓		Same as at left	㉓		Same as at left
⑤ ⑨						㉔	5V	5V
⑥ ⑩						㉔	5V	5V
⑦								
⑪ ⑬		Same as at left						
⑫ ⑭		Same as at left						
⑮								

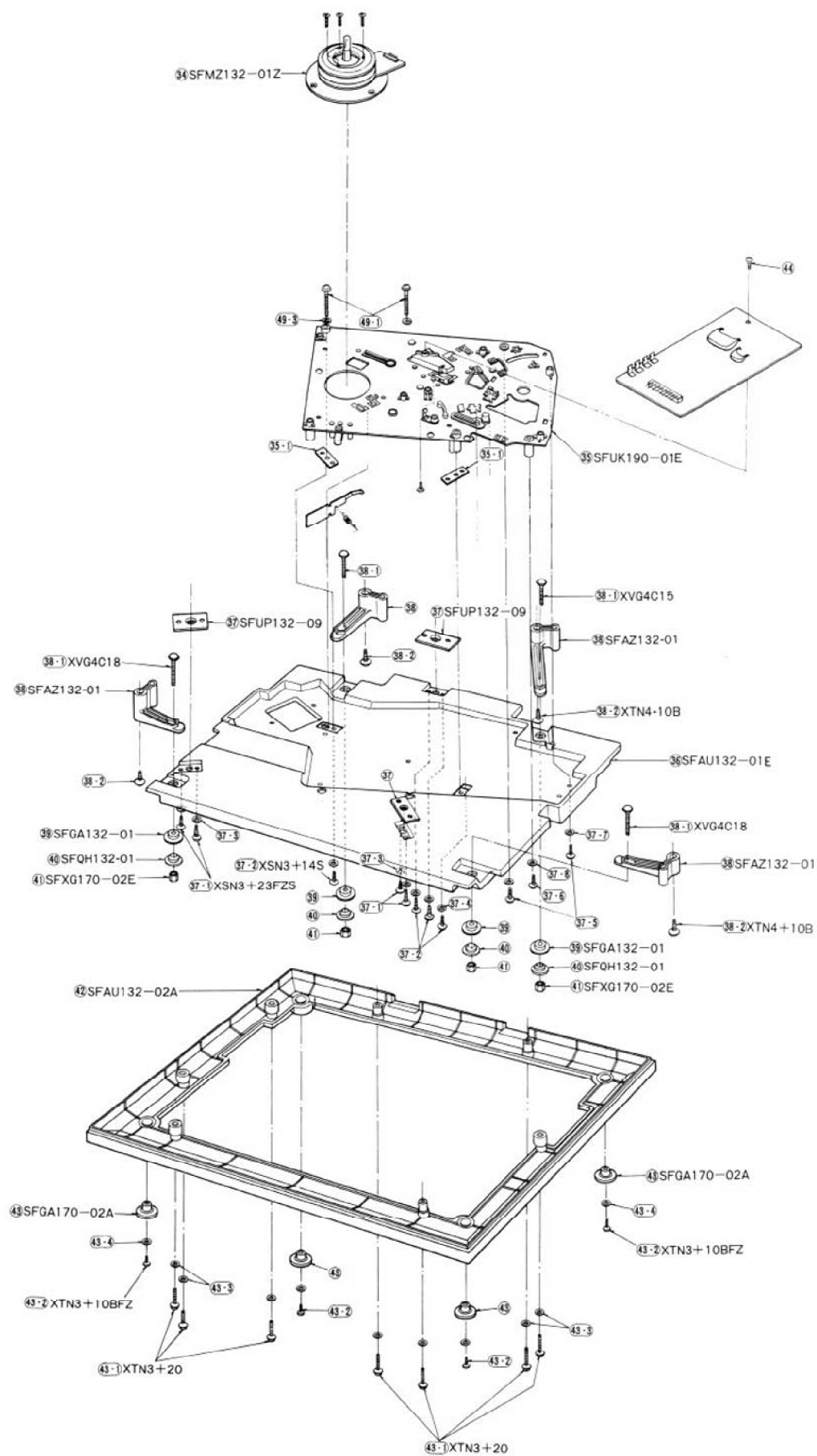
■ EXPLODED VIEW



■ EXPLODED VIEW



■ EXPLODED VIEW



REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by shaded area have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

Note: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.

2. SL-1500MK2 (IM) → (MC)
SL-1500MK2 (MC)

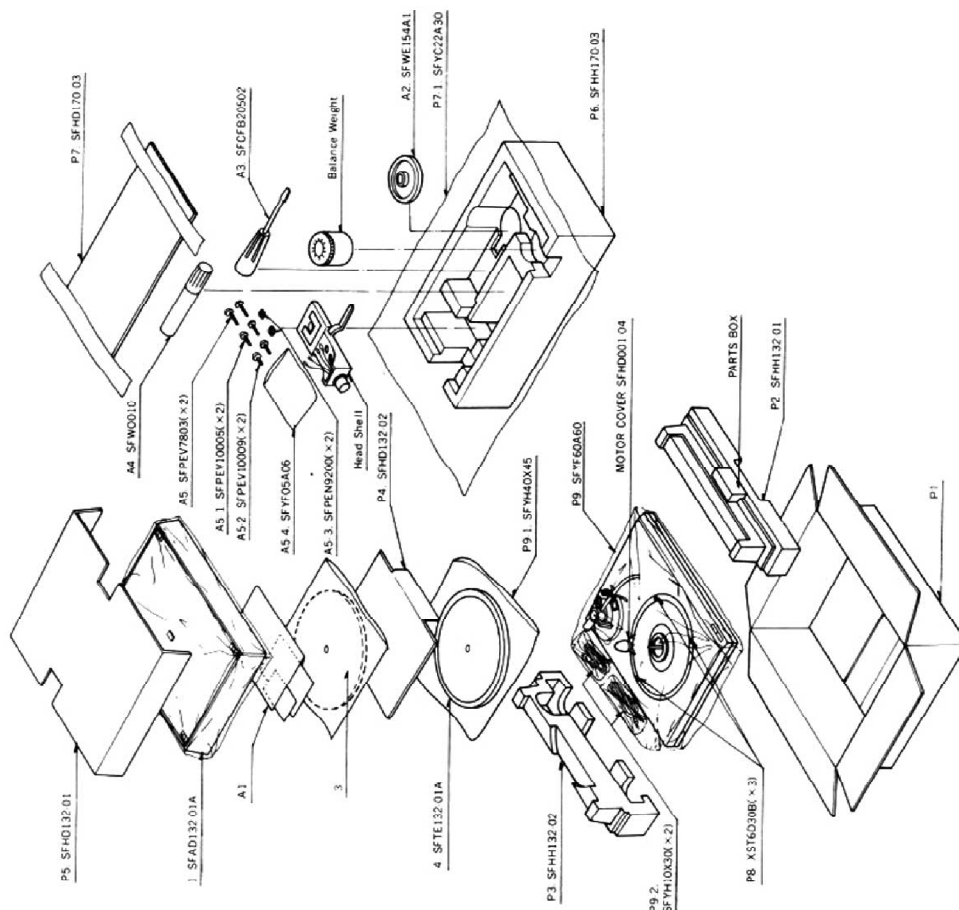
Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
INTEGRATED CIRCUITS				
IC101	AN640	Drive Circuit	1	
IC201	DN860	Frequency Divider Circuit	1	
IC202	AN660	Control Circuit	1	
IC301	MN6042	Pitch Control Circuit	1	
TRANSISTORS				
TR1, 4, 7	2SC1826-Y	Transistors (Use in ranks Q or Y or G)	3	
TR2, 3, 6, 8,	2SC1328G	Transistors	4	
TR5	2SC1384A-Q	Transistor (Use in ranks Q or R or S)	1	
TR101	2SA752-Q	Transistor (Use in pair ranks Q or R or S)	1	
TR102	2SC1406-Q	Transistor	1	
TR103	2SA752-Q	Transistor	1	
TR104	2SC1406-Q	Transistor	1	
TR105	2SA752-Q	Transistor	1	
TR106	2SC1406-Q	Transistor	5	
TR107, 108, 111	2SA666A-R	Transistor (Use in ranks Q or R or S)	13	
301, 302				
TR109, 110, 112,	2SC1328-T	Transistors	3	
201, 202, 203,				
204, 205, 206,				
207, 303, 409,				
410				
TR304, 305, 306	2SA719-P	Transistors (Use in ranks P or Q or R or S)	3	
DIODES				
D1, 2	SVDSIRBA20	Rectifier	2	
D3, 301	SVDRD5.1EBS	5.1V Zener, Voltage Stabilizer	2	
D101, 202, 302,	MA150	Diodes	3	
D201	SVDRD9.1EBS	9.1V Zener, Voltage Stabilizer	1	
D203	SVDDL-7R204	Light Emitting Diode (r.p.m)	1	
D204, 205, 206,	SVDSR105C	Light Emitting Diode	9	
207, 208, 209,				
210, 401, 402				
D303	SVDDL-7R203	Light Emitting Diode (pitch)	1	
CRYSTAL				
X204	SVQOU306115	4.19328MHz Oscillator	1	
TRANSFORMER				
T1	SLT60EU3B	Power Transformer	1	
FUSE				
F1	XBA2E04NU100	400mA (Fuse)	1	
F2 [MC only]	XBA2E10NU100	1A (Fuse)	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
SWITCHES				
S201, 202	EVOP4R04K	Speed Selector Switches	2	
S301, 302, 303	EVOP4R04K	Pitch Control Switches	3	
S401, 402	EVOP4R04K	Start or Stop Switches	2	
S601	SFDS56GL2	Power Switch	1	
	SFDSHSW0634	Switch, Muting	1	
RESISTORS				
R1	ERD25TJ562	Carbon, 5.6kΩ, 1/4W, ± 5%	1	
R2	ERD25TJ102	Carbon, 1kΩ, 1/4W, ± 5%	1	
R3	ERD25TJ152	Carbon, 1.5kΩ, 1/4W, ± 5%	1	
R4	ERD25TJ151	Carbon, 150Ω, 1/4W, ± 5%	1	
R5	ERD25TJ152	Carbon, 1.5kΩ, 1/4W, ± 5%	1	
R6	ERD25TJ562	Carbon, 5.6kΩ, 1/4W, ± 5%	1	
R7	ERD25TJ123	Carbon, 12kΩ, 1/4W, ± 5%	1	
R8	ERD25TJ472	Carbon, 4.7kΩ, 1/4W, ± 5%	1	
R9	ERG3ANJ470	Metal Film, 47Ω, 3W, ± 5%	1	
R101, 102, 103	ERX1ANJ470	Metal Film, 47Ω, 1W, ± 5%	3	
R104	ERX1ANJ150	Metal Film, 15Ω, 1W, ± 5%	3	
R107	ERD25TJ472	Carbon, 4.7kΩ, 1/4W, ± 5%	1	
R108	ERD25TJ392	Carbon, 3.9kΩ, 1/4W, ± 5%	1	
R109	ERD25TJ150	Carbon, 15Ω, 1/4W, ± 5%	1	
R110, 111	ERD25TJ103	Carbon, 10kΩ, 1/4W, ± 5%	2	
R112	ERD25TJ472	Carbon, 4.7kΩ, 1/4W, ± 5%	1	
R113	ERX1ANJ1R8	Metal Film, 1.8Ω, 1W, ± 5%	1	
R114	ERD25TJ473	Carbon, 47kΩ, 1/4W, ± 5%	1	
R115	ERD25TJ103	Carbon, 10kΩ, 1/4W, ± 5%	1	
R116	ERD25TJ332	Carbon, 3.3kΩ, 1/4W, ± 5%	1	
R117	ERD25TJ103	Carbon, 10kΩ, 1/4W, ± 5%	1	
R118	ERD25TJ153	Carbon, 15kΩ, 1/4W, ± 5%	1	
R119	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%	1	
R120	ERD25TJ563	Carbon, 56kΩ, 1/4W, ± 5%	1	
R121	ERD25TJ102	Carbon, 1kΩ, 1/4W, ± 5%	1	
R122, 123	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%	2	
R124	ERD25TJ103	Carbon, 10kΩ, 1/4W, ± 5%	1	
R125	ERD25TJ393	Carbon, 39kΩ, 1/4W, ± 5%	1	
R126	ERD25TJ103	Carbon, 10kΩ, 1/4W, ± 5%	1	
R201	ERX1ANJ101	Metal Film, 100Ω, 1W, ± 5%	1	
R202	ERD25TJ473	Carbon, 47kΩ, 1/4W, ± 5%	1	
R203	ERD25TJ393	Carbon, 39kΩ, 1/4W, ± 5%	1	
R204	ERD25TJ102	Carbon, 1kΩ, 1/4W, ± 5%	1	
R205	ERD25TJ471	Carbon, 470Ω, 1/4W, ± 5%	1	
R206, 207	ERD25TJ333	Carbon, 33kΩ, 1/4W, ± 5%	2	
R208	ERD25TJ563	Carbon, 56kΩ, 1/4W, ± 5%	1	
R209	ERD25TJ222	Carbon, 2.2kΩ, 1/4W, ± 5%	1	
R210	ERD25TJ151	Carbon, 150Ω, 1/4W, ± 5%	1	
R211	ERD25TJ221	Carbon, 220Ω, 1/4W, ± 5%	1	
R212	ERD25TJ222	Carbon, 2.2kΩ, 1/4W, ± 5%	1	
R213	ERD25TJ223	Carbon, 22kΩ, 1/4W, ± 5%	1	
R214	ERD25TJ563	Carbon, 56kΩ, 1/4W, ± 5%	1	
R215	ERD25TJ823	Carbon, 82kΩ, 1/4W, ± 5%	1	
R216	ERD25TJ333	Carbon, 33kΩ, 1/4W, ± 5%	1	
R217	ERD25TJ123	Carbon, 12kΩ, 1/4W, ± 5%	1	
R218	ERD25TJ102	Carbon, 1kΩ, 1/4W, ± 5%	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R219, 220	ERD25TJ471	Carbon, 470Ω, 1/4W, ± 5%	2	
R221	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%	1	
R222	ERD25TJ563	Carbon, 56kΩ, 1/4W, ± 5%	1	
R223	ERD25TJ472	Carbon, 47kΩ, 1/4W, ± 5%	1	
R224	ERD25TJ473	Carbon, 47kΩ, 1/4W, ± 5%	1	
R225	ERD25TJ101	Carbon, 100Ω, 1/4W, ± 5%	1	
R226	ERD25TJ681	Carbon, 680Ω, 1/4W, ± 5%	1	
R227	ERD25TJ153	Carbon, 15kΩ, 1/4W, ± 5%	1	
R228	ERD25TJ563	Carbon, 56kΩ, 1/4W, ± 5%	1	
R229	ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%	1	
R230	ERD25TJ103	Carbon, 10kΩ, 1/4W, ± 5%	1	
R231	ERD25TJ121	Carbon, 120Ω, 1/4W, ± 5%	1	
R232	ERD25TJ680	Carbon, 68Ω, 1/4W, ± 5%	1	
R233	ERD25TJ223	Carbon, 22kΩ, 1/4W, ± 5%	1	
R234	ERD25TJ472	Carbon, 47kΩ, 1/4W, ± 5%	1	
R301	ERD25TJ391	Carbon, 390Ω, 1/4W, ± 5%	1	
R302	ERD25TJ272	Carbon, 27kΩ, 1/4W, ± 5%	1	
R303	ERD25TJ102	Carbon, 1kΩ, 1/4W, ± 5%	1	
R304	ERD25TJ103	Carbon, 10kΩ, 1/4W, ± 5%	1	
R305	ERD25TJ472	Carbon, 47kΩ, 1/4W, ± 5%	1	
R306	ERD25TJ102	Carbon, 1kΩ, 1/4W, ± 5%	1	
R307	ERD25TJ332	Carbon, 3.3kΩ, 1/4W, ± 5%	1	
R308	ERD25TJ273	Carbon, 27kΩ, 1/4W, ± 5%	1	
R309, 310	ERD25TJ473	Carbon, 47kΩ, 1/4W, ± 5%	2	
R311	ERD25TJ222	Carbon, 2.2kΩ, 1/4W, ± 5%	1	
R312, 313	ERD25TJ153	Carbon, 15kΩ, 1/4W, ± 5%	2	
R314	EXR8B7121M	Composite Resistor, 120Ω x 7, ±20%	1	○
R315, 316, 317	ERD25TJ152	Carbon, 1.5kΩ, 1/4W, ± 5%	3	
R318	ERD25TJ221	Carbon, 220Ω, 1/4W, ± 5%	1	
R319	ERD25TJ121	Carbon, 120Ω, 1/4W, ± 5%	1	
R320	ERD25TJ680	Carbon, 68Ω, 1/4W, ± 5%	1	
R419	ERD25TJ471	Carbon, 470Ω, 1/4W, ± 5%	1	
R601	ERD50TJ4R7	Carbon, 4.7Ω, 1/2W, ± 5%	1	
R1501	ERD25TJ102	Carbon, 1kΩ, 1/4W, ± 5%	1	
R1502	ERD25TJ102	Carbon, 1kΩ, 1/4W, ± 5%	1	
VARIABLE RESISTORS				
VR101	EVL33AA00B14	Period Adjustment	1	
VR201	EVL33AA00B24	VS Adjustment	1	
VR202	EVL33AA00B24	IR Adjustment	1	
VR203	EVL33AA00B54	Brake Adjustment	1	
CAPACITORS				
C1	ECEA35V330	Electrolytic, 330μF, 35V	1	
C2	ECEA25V33	Electrolytic, 33μF, 25V	1	
C3	ECEA16V10	Electrolytic, 10μF, 16V	1	
C4	ECEA16V47	Electrolytic, 47μF, 16V	1	
C5	ECEA50V470	Electrolytic, 470μF, 50V	1	
C6	ECEA25V33	Electrolytic, 33μF, 25V	1	
C101, 102, 103	ECEA25V33	Electrolytic, 33μF, 25V	3	
C104	ECOM1H104KZ	Electrolytic, 0.1μF, 50V, ±10%	1	
C105	ECSZ25EF1	Polyester, 1μF, 25V	1	
C106	ECSZ25EF2R2	Electrolytic, 2.2μF, 25V	1	
C107	ECSZ25EF1	Electrolytic, 1μF, 25V	1	
C108	ECOM1H223K2	Polyester, 0.022μF, 50V, ±10%	1	
C109	ECEA25Z103	Electrolytic, 100μF, 25V	1	
Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C110	ECOM05154KZ	Polyester, 0.15μF, 50V, ±10%	1	
C111	ECOM1H333KZ	Polyester, 0.033μF, 50V, ±10%	1	
C112	ECOM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C113	ECOM1H562KZ	Polyester, 0.0056μF, 50V, ±10%	1	
C114	ECEA25V100	Electrolytic, 100μF, 25V	1	
C115	ECEA16V10	Electrolytic, 10μF, 16V	1	
C201	ECKD1E104ZFZ	Ceramic, 0.1μF, 50V	1	
C202	ECEA25V2R2	Electrolytic, 2.2μF, 25V	1	
C203	ECSZ25EF2R2	Electrolytic, 2.2μF, 25V	1	
C204	ECCD1H330K	Ceramic, 33pF, 50V, ±10%	1	
C205, 206	ECCD1H331K	Ceramic, 330pF, 50V, ±10%	2	
C207	ECOM1H822KZ	Polyester, 0.0082μF, 50V, ±10%	1	
C208, 209	ECSZ25EF1	Electrolytic, 1μF, 25V	2	
C210	ECOM1H103KZ	Polyester, 0.01μF, 50V, ±10%	1	
C211	ECOM1H563KZ	Polyester, 0.056μF, 50V, ±10%	1	
C212	ECOM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C213	ECEA16V10	Electrolytic, 10μF, 16V	1	
C214	ECOM1H562KZ	Polyester, 0.0056μF, 50V, ±10%	1	
C215	ECOM1H562KZ	Polyester, 0.0056μF, 50V, ±10%	1	
C216, 217	ECOM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C218	ECOM1H562KZ	Polyester, 0.0056μF, 50V, ±10%	1	
C219, 220	ECOM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C221	ECKD1E104ZFZ	Ceramic, 0.1μF, 50V	1	
C222	ECEA50V4R7	Electrolytic, 4.7μF, 50V	1	
C223	ECEA50V1	Electrolytic, 1μF, 50V	1	
C224	ECEA16V10	Electrolytic, 10μF, 16V	1	
C225	ECOM1H473KZ	Polyester, 0.047μF, 50V, ±10%	1	
C226, 227	ECOM1H104KZ	Polyester, 0.1μF, 50V, ±10%	2	
C228	ECEA16V47	Electrolytic, 47μF, 16V	1	
C229	ECOM1H103KZ	Polyester, 0.01μF, 50V, ±10%	1	
C230	ECOM1H102KZ	Polyester, 0.001μF, 50V, ±10%	1	
C231	ECKD1E104ZFZ	Ceramic, 0.1μF, 50V	1	
C301	ECEA16V10	Electrolytic, 10μF, 16V	1	
C302	ECOM1H102KZ	Polyester, 0.001μF, 50V, ±10%	1	
C303	ECOM1H103KZ	Polyester, 0.01μF, 50V, ±10%	1	
C304	ECEA50V4R7	Electrolytic, 4.7μF, 50V	1	
C305	ECOM1H103KZ	Electrolytic, 0.01μF, 50V, ±10%	1	
C306	ECOM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C307	ECKD1E104ZFZ	Ceramic, 0.1μF, 50V	1	
C308	ECEA6V220	Electrolytic, 220μF, 6V	1	
C610	ECOM1H102KZ	Polyester, 0.001μF, 50V, ±10%	1	
C601 [M]	ECGF1A473MD	Polyester, 0.047μF, 125V, ±20%	1	
C601 [MC]	ECOU1A473MC	Polyester, 0.047μF, 125V, ±20%	1	
CABINET and CHASSIS PARTS				
1	SFAD132-01A	Dust Cover	1	
2	SFAT165-01A	Hinge Ass'y	2	
3 [M]	SFTG170M01	Turntable Mat	1	
3 [MC]	SFTG170-01	Turntable Mat	1	
4	SFTG132-01A	Turntable	1	
5	SFUM132-02	Cover, Panel	1	
5-1	XTN33+8BFZ	Screw, Panel Cover	6	
6 [M]	SFNN155M01	Name Plate	1	○
6 [MC]	SFNN155C01	Name Plate	1	○
7	SFUM132-04	Cover, Transformer	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
7-1	XTN3+10BFZ	Screw, Transformer Cover	2	
7-2	XWG3	Washer, Transformer Cover	2	
8	RJA10A	AC Cord	1	
9	SFUM170-06	Spacer, AC Power Cord	1	
10	SFUM170-05	Bracket, AC Power Cord	1	
10-1	XTN3+14BFZ	Screw, AC Cord Bracket	2	
10-2	XWG3	Washer, AC Cord Bracket	2	
11	SFUM170-07	Case, Hinge Ass'y	2	
11-1	XTN3+8BFZ	Screw, Hinge Ass'y Case	4	
12 [M]	SFDH360M01	Phono Cord	1	
12 [MC]	SFDH028-01	Phono Cord	1	
13	SFEL028-01E	Ground Wire	1	
14	SFUM170-06	Spacer, Phono Cord	1	
15	SFUM170-11	Bracket, Phono Cord	1	
15-1	XTN3+14BFZ	Screw, Phono Cord Bracket	2	
15-2	XWG3	Washer, Phono Cord Bracket	2	
16	XTN3+8B	Screw, Phono Cord P.C.B.	1	
17	SFAC155-01W	Cabinet	1	
17-1	SFUZ132-03	Sheet, Panel Cover	1	
18	XTN3+8B	Screw, P.C.B.	2	
19	SFUP132-03	Bracket, Power Transformer	1	
19-1	SFGC132-01	Spacer (Rubber), Power Transformer Bracket	3	
19-2	XTN4+10B	Screw, Power Transformer	2	
19-3	SFXW750-01	Washer, Power Transformer Bracket	3	
19-4	XTN3+10B	Screw, Power Transformer Bracket	3	
19-5	SFUP132-11	Plate, Shield	1	
20	SFUP132-02E	Bracket, Power Switch	1	
20-1	SFUZ132-02	Felt, Power Switch Knob	1	
20-2	SFXJ132-03	Support, Power Switch Knob	1	
20-3	SFQA001-02	Spring, Power Switch Knob	1	
20-4	SFUP001-10	Support, Power Switch Knob	1	
21	SFUM001-11	Cam, Power Switch	1	
21-1	SFUP001-12	Support, Power Switch	1	
21-2	SFUM132-07	Cam, Power Switch Cam	1	
22	SFUM132-05	Holder, Power Switch	1	
23	SFUM132-06	Holder, Power Switch	1	
23-1	XTN3+8B	Screw, Power Switch Bracket	2	
23-2	XTN3+16B	Screw, Power Switch Holder	1	
23-3	XSN3+10S	Screw, Power Switch Cam	1	
23-4	XWC3B	Washer, Power Switch Cam	1	
24	SFUP132-08	Mirror	1	
25	SFUP132-04	Bracket, Panel	1	
25-1	XTN3+6B	Screw, Panel Bracket	1	
26	SFKT132-05	Knob, Power Switch	1	
27	SFUM155M01	Panel	1	
28	SFKT132-03	Knob, Operation	4	
29	SFKT132-04	Knob, Operation	1	
30	SFKT132-01E	Knob, Operation	1	
31	SFKT132-02E	Knob, Operation	1	
32	SFUM132-09	Felt	1	
32-1	XWA3B	Washer, Panel	4	
32-2	XNG3BS	Nut, Panel	4	
32-3	XTN3+8B	Screw, P.C.B.	8	
33	SFXB132-02	Spacer, Operation	2	
33-1	SFXB132-01	Spacer, Operation	5	
33-2	SFXG132-01	Screw, Operation	4	
Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
33-3	XNS6JM	Nut, Operation Spacer	2	
33-4	XNG4HS1	Nut, Operation Spacer	5	
33-5	SFQA132-01	Spring, Operation Knob	2	
33-6	SFQA132-02	Spring, Operation Knob	5	
33-7	XUC3FT	Circlip, Operation Knob	2	
33-8	XUC25FT	Circlip, Operation Knob	5	
34	SFUMZ132-01Z	D.D. Motor Ass'y	1	
35	SFUK190-01E	Base, Automatic Mechanism	1	
35-1	SFUP190-02	Bracket, Automatic Mechanism Base	2	
36	SFAU132-01E	Base, Main	1	
37	SFUP132-09	Bracket, Main Base	3	
37-1	XSN3+23FZS	Screw, Main Base Bracket	4	
37-2	XSN3+14S	Screw, Main Base Bracket	4	
37-3	XWG3	Washer, Main Base Bracket	4	
37-4	XWG3	Washer, Main Base Bracket	4	
37-5	XTN4+35B	Screw, Main Base	2	
37-6	XTN3+35B	Screw, Main Base	6	
37-7	XWG4	Washer, Main Base	2	
37-8	XWG4	Washer, Main Base	6	
38	SFAZ132-01	Insulator (A)	4	
38-1	XVG4C18	Screw, Insulator (A)	4	
38-2	XTN4+10B	Screw, Insulator (A)	4	
39	SFGA132-01	Rubber, Insulator (A)	4	
40	SFQH132-01	Spring, Insulator (A)	4	
41	SFXG170-02E	Nut, Insulator (A)	4	
42	SFAU132-02A	Bottom, Cover	1	
43	SFGA170-02A	Insulator (B)	4	
43-1	XTN3+20	Screw, Bottom Cover	7	
43-2	XTN3+10BFZ	Screw, Insulator (B)	4	
43-3	XWG3	Washer, Bottom Cover	7	
43-4	XWG4	Washer, Insulator (B)	4	
44	XTN3+8B	Screw, P.C.B.	1	
TONE ARM and ARM BASE				
TA1	SFPWG13201K	Balance Weight Ass'y	1	
TA2	SFPAM13201K	Tone Arm Ass'y	1	
TA3	SFPCC10001K	Head Shell	1	
TA4	SFXG829-1	Screw, Tone Arm Lift Adjustment	1	
TA5	SFPRT19001K	Lift Ass'y	1	
TA5-1	SFQA829-03	Spring, Lift Ass'y	1	
TA6 [M]	SFGK132M01	Cap, Rubber	3	
TA6 [MC]	SFGK132-01	Cap, Rubber	3	
TA7	SFPJK13202	Knob, Anti-skate Force Control	1	
TA8	SFPKD13201	Arm Base	1	
TA9	SFPZB13209	Bracket, Tone Arm	1	
TA10	SFPEV13201	Screw, Tone Arm Bracket	1	
TA10-1	SFPZB13211	Cover, Spring	1	
TA10-2	SFPSP13203	Spring, Tone Arm Bracket Screw	1	
TA10-3	SFPZB13212	Pin, Tone Arm Bracket Screw	1	
TA10-4	SFPSP13204	Spring, Tone Arm Bracket Screw	1	
TA11	SFPSP13201	Support, Anti-skate Force Control	1	
TA11-1	XWE3A7BW	Washer, Anti-skate Force Control Support	1	
TA11-2	XTN3+5B	Screw, Anti-skate Force Control Support	1	
TA12	SFPJK17002	Cam, Anti-skate Force Control	1	
TA12-1	SFPEW13005	Washer, Anti-skate Force Control Knob	1	
TA12-2	XTN26+5B	Screw, Anti-skate Force Control Knob	1	

PACKINGS



Ref. No.	Part No.	Part Name & Description	Par Set	Remarks
TA13	SFGM20001	Rubber, Cueing Lever	1	
TA14	SFPLJ13201K	Cueing Lever Ass'y	1	
TA15	SFPZB13204	Plate, Arm Rest	1	
TA16	SFPAB13202	Knob, Arm Lift	1	
TA17	SFPLJ13203K	Lift Bar Ass'y	1	
TA17-1	SFSP13201	Spring, Arm Lift Base	1	
TA17-2	XWE4A10BW	Washer, Arm Lift Base	1	
TA17-3	XUC3FT	Circlip, Arm Lift Base	1	
TA18	SFPR13201K	Arm Rest	1	
TA19	SFPAB13203	Plate, Lift	1	
TA20	SFPZB13208	Support, Lift	1	
TA20-1	XTN3+5B	Screw, Lift Support	2	
TA21	SFPAB13213K	Base, Arm Lift	1	
TA21-1	XSN3+5S	Screw, Arm Lift Base	2	
TA21-2	SFSP13202	Spring	1	
TA21-3	XSN3+3S	Screw, Spring	1	
TA21-4	XWA26B	Washer, Arm Rest	1	
TA21-5	XNG268FN	Nut, Arm Rest	1	
TA22 [M]	SFPAB13218K	PU Output Cord Ass'y	1	
TA22 [MC]	SFPAB13215K	PU Output Cord Ass'y	1	
TA22-1	XWA3B	Washer, P.C.B. Ass'y	2	
TA22-2	XSN3+3S	Screw, P.C.B. Ass'y	2	
TA23	SFPAB15209A	Tone Arm Fixing Plate Ass'y	1	
TA23-1	SFSP00101	Spring, Anti Skating	1	
TA23-3	XSN3+6S	Screw	2	
ACCESSORIES				
A1 [M]	SFNU155M01	Instruction Book	1	
A1 [MC]	SFNU155C01	Instruction Book	1	
A2	SFWE154A1	Adaptor, 45 r.p.m	1	
A3	SFCFB20502	Screw driver	1	
A4	SFW0010	Oil	1	
A5	SFPEV7803	Screw, Cartridge	2	
A5-1	SFPEV10005	Screw, Cartridge	2	
A5-2	SFPEV10009	Screw, Cartridge	2	
A5-3	SFPEN9200	Nut, Cartridge	2	
A5-4	SFYF05A06	Polyethylene Bag	1	
PACKING PARTS				
P1 [M]	SFHP155M01	Carton	1	
P1 [MC]	SFHP155C01	Carton	1	
P2	SFHH132 01	Pad, Front	1	
P3	SFHH132 02	Pad, Rear	1	
P4	SFHD132 02	Pad, Turntable	1	
P5	SFHD132 01	Pad, Top	1	
P6	SFHH170 03	Parts Box	1	
P7	SFHD170 03	Pad, Top, Parts Box	1	
P7-1	SFYC22A30	Polyethylene Cover	1	
P8	XST60308	Screw, Clamp	3	
P9	SFYF0A06	Polyethylene Bag, Player Unit	1	
P9-1	SFYH40X45	Polyethylene Bag, Turntable	1	
P9-2	SFYH10X30	Polyethylene Bag, AC Cord	2	