

# 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)

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

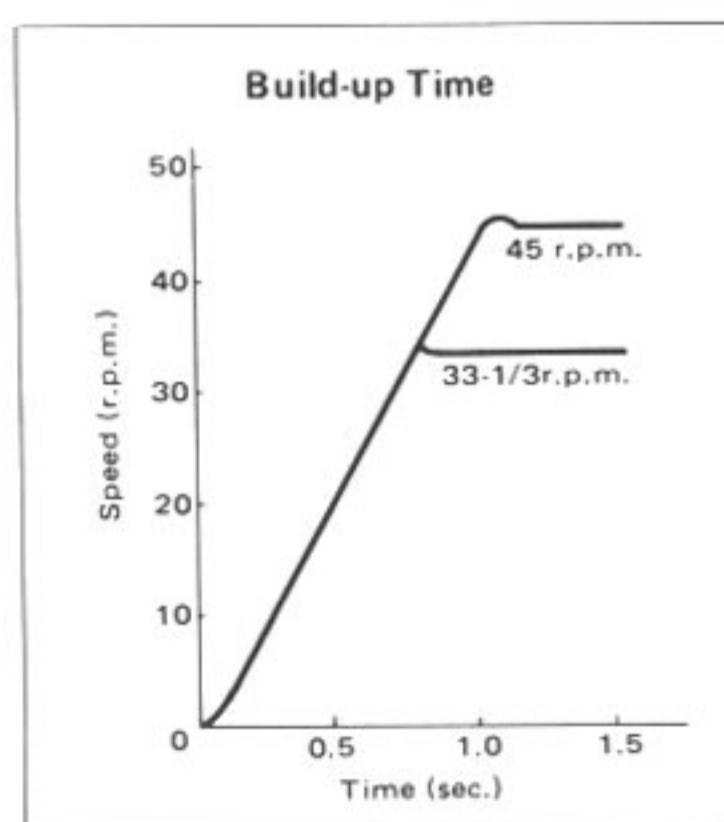


Fig. 1

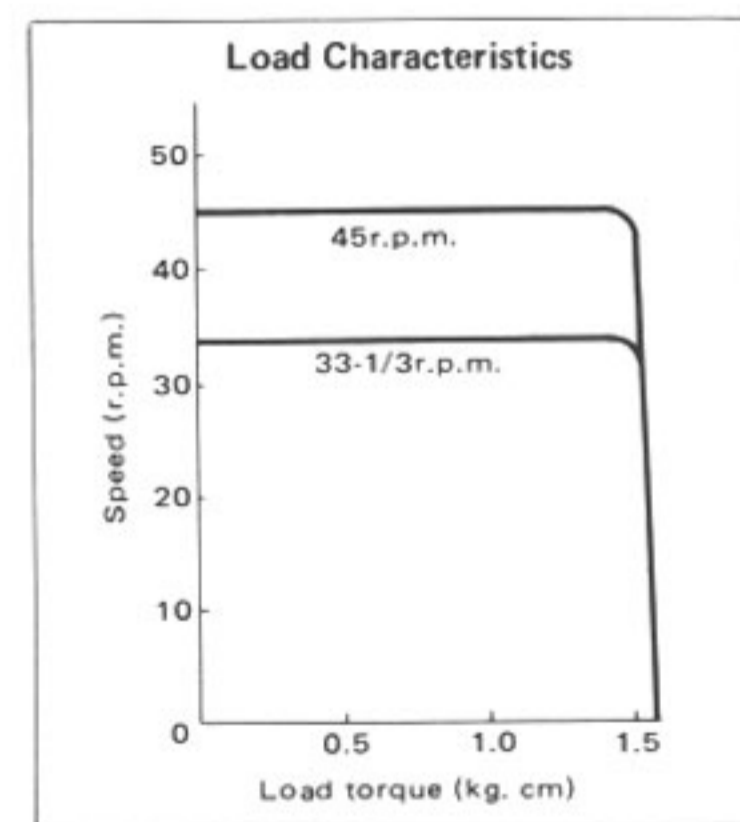


Fig. 2

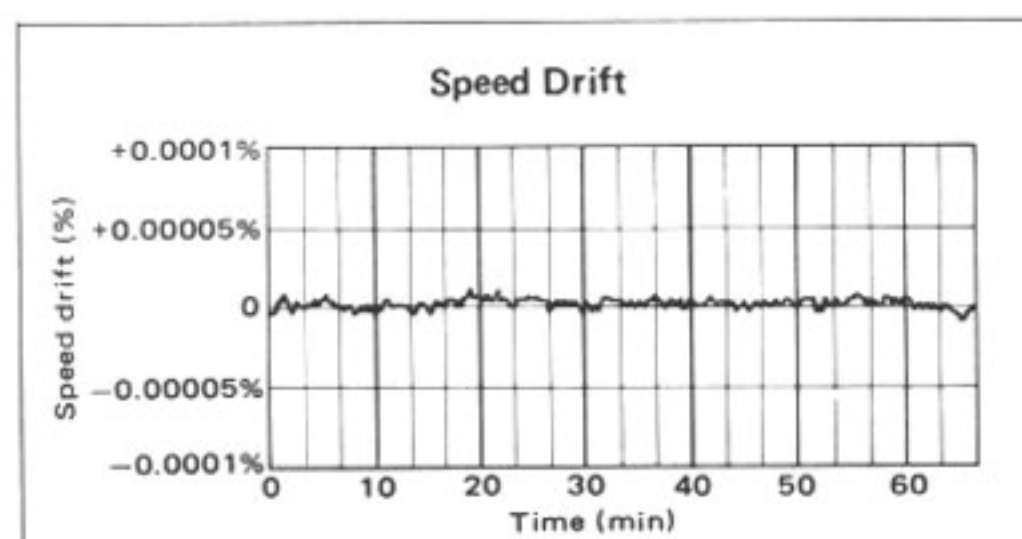


Fig. 3

# ■ CROSS SECTION OF MOTOR PORTION AND DOUBLE INSULATOR

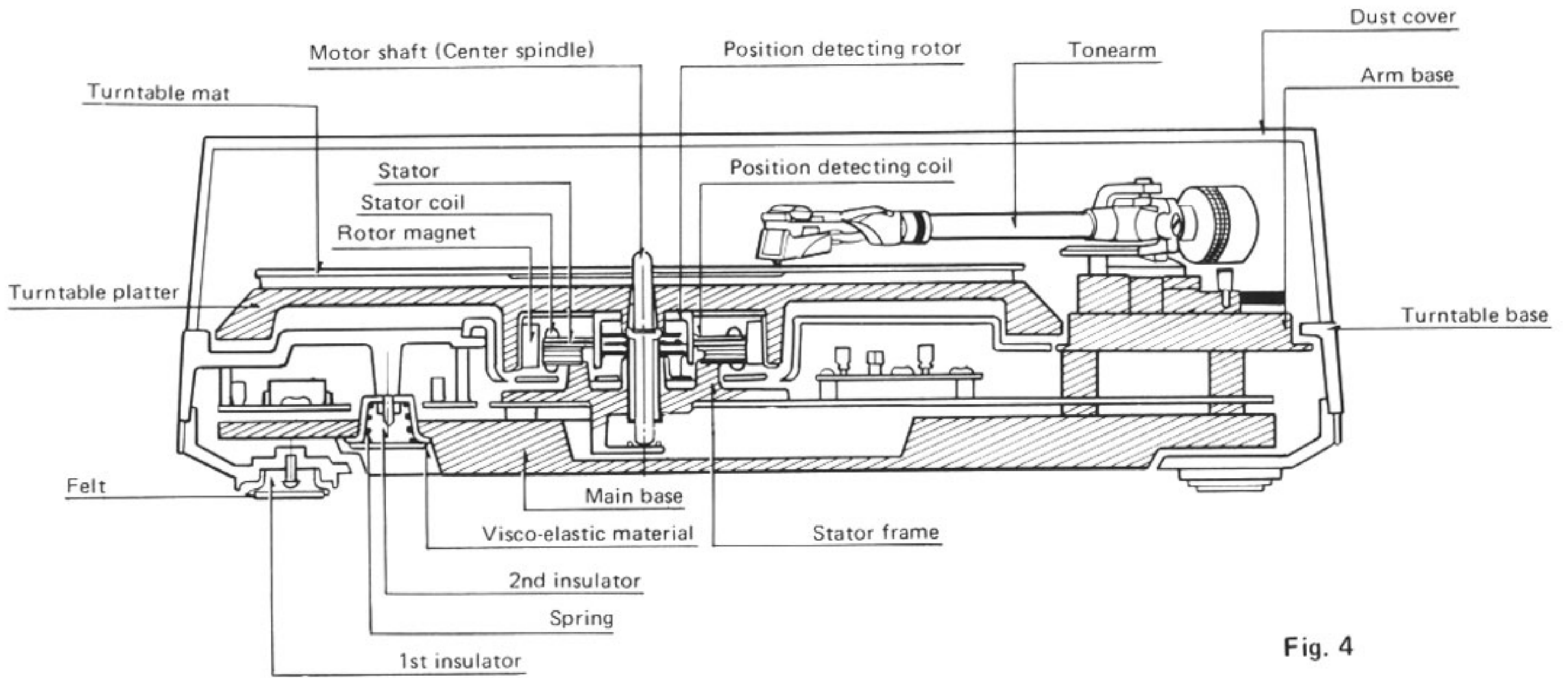


Fig. 4

# ■ PARTS IDENTIFICATION

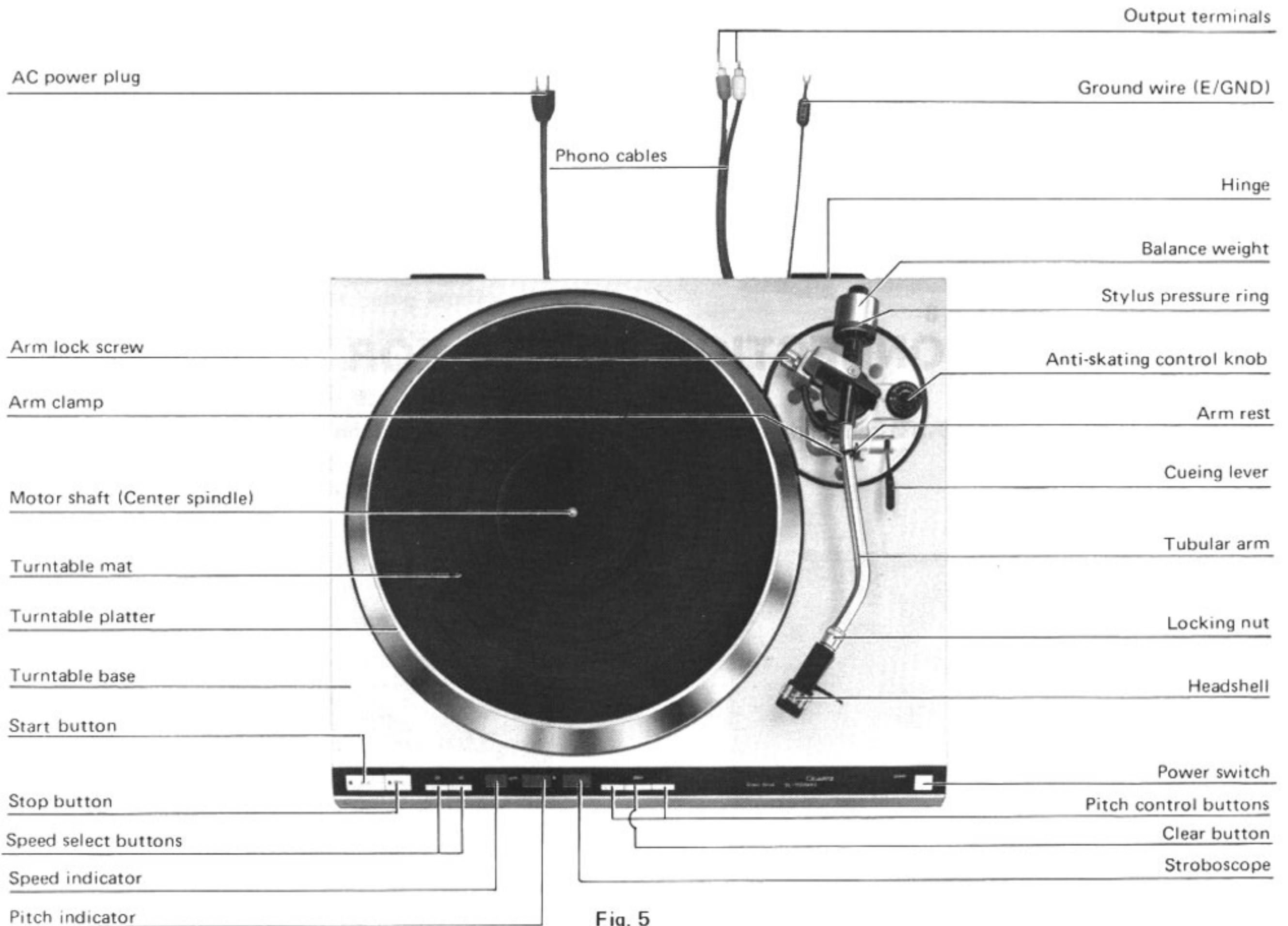


Fig. 5

## ■ 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.

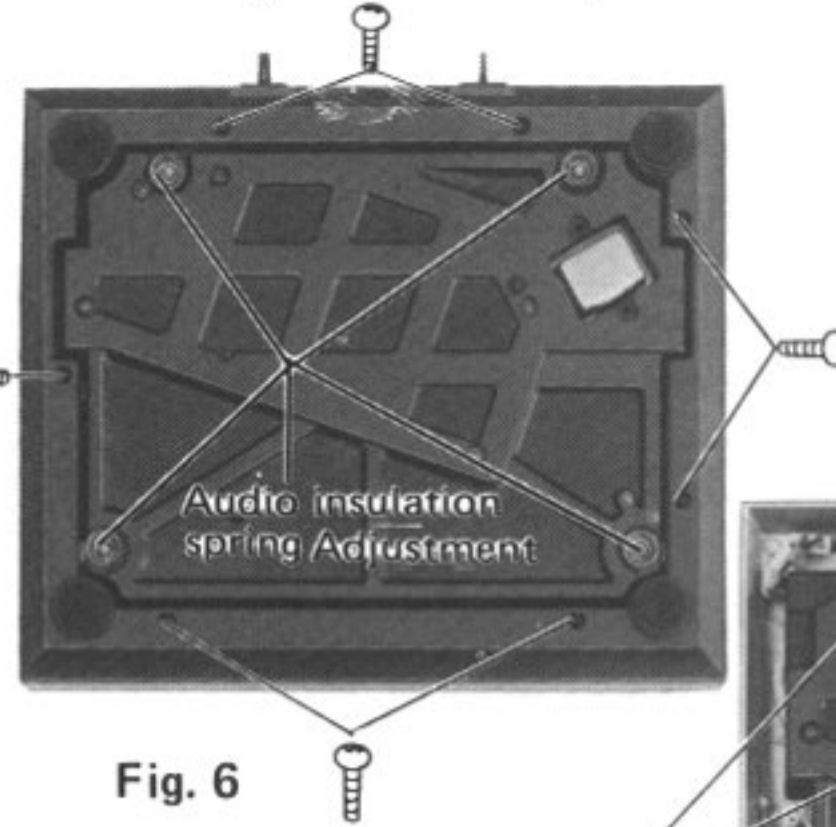


Fig. 6

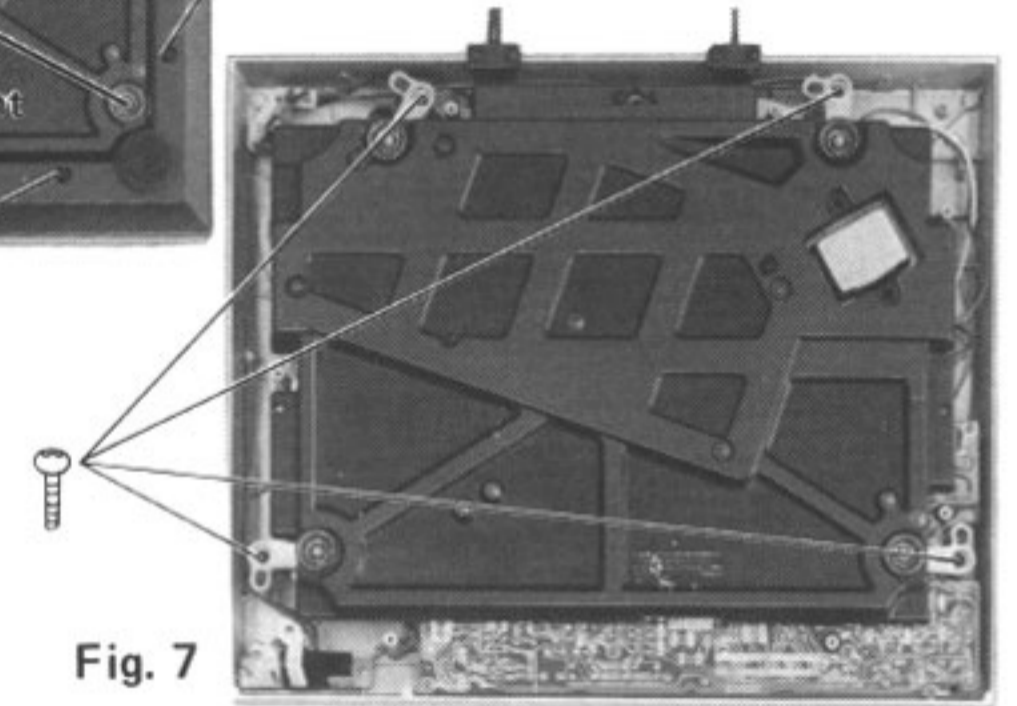


Fig. 7

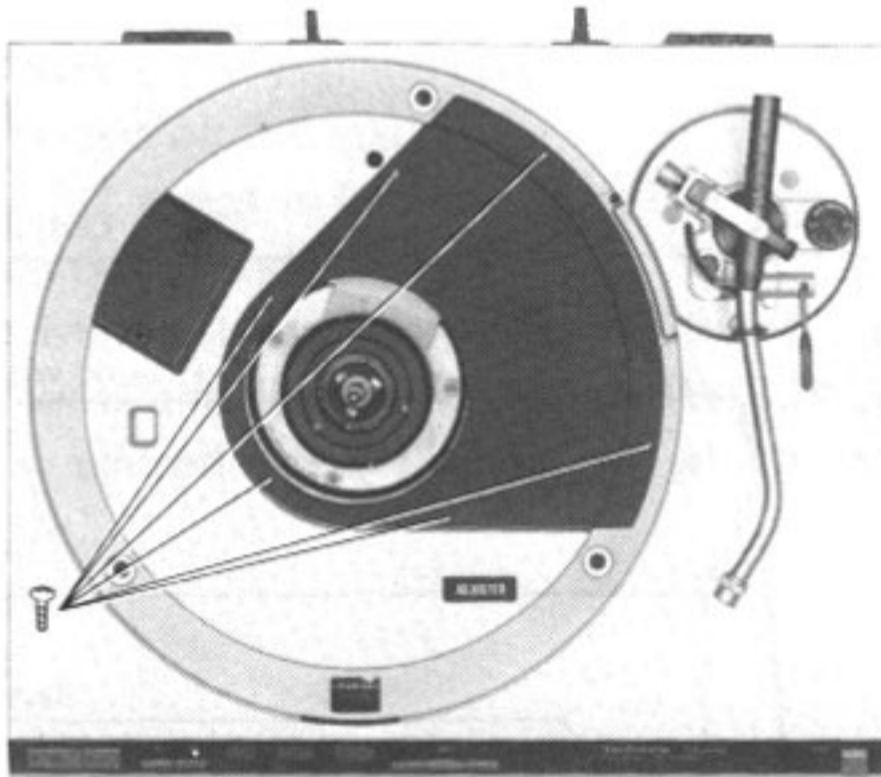


Fig. 8

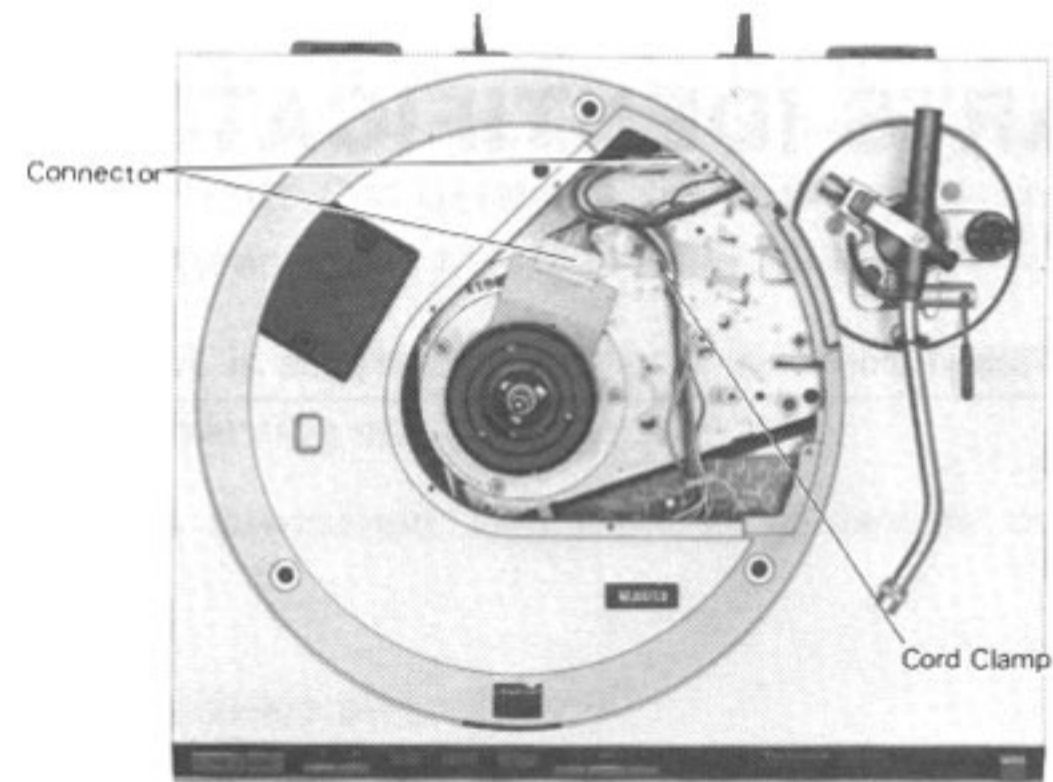


Fig. 9

## ■ CONNECTOR CONNECTION POINTS FOR INSPECTION

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

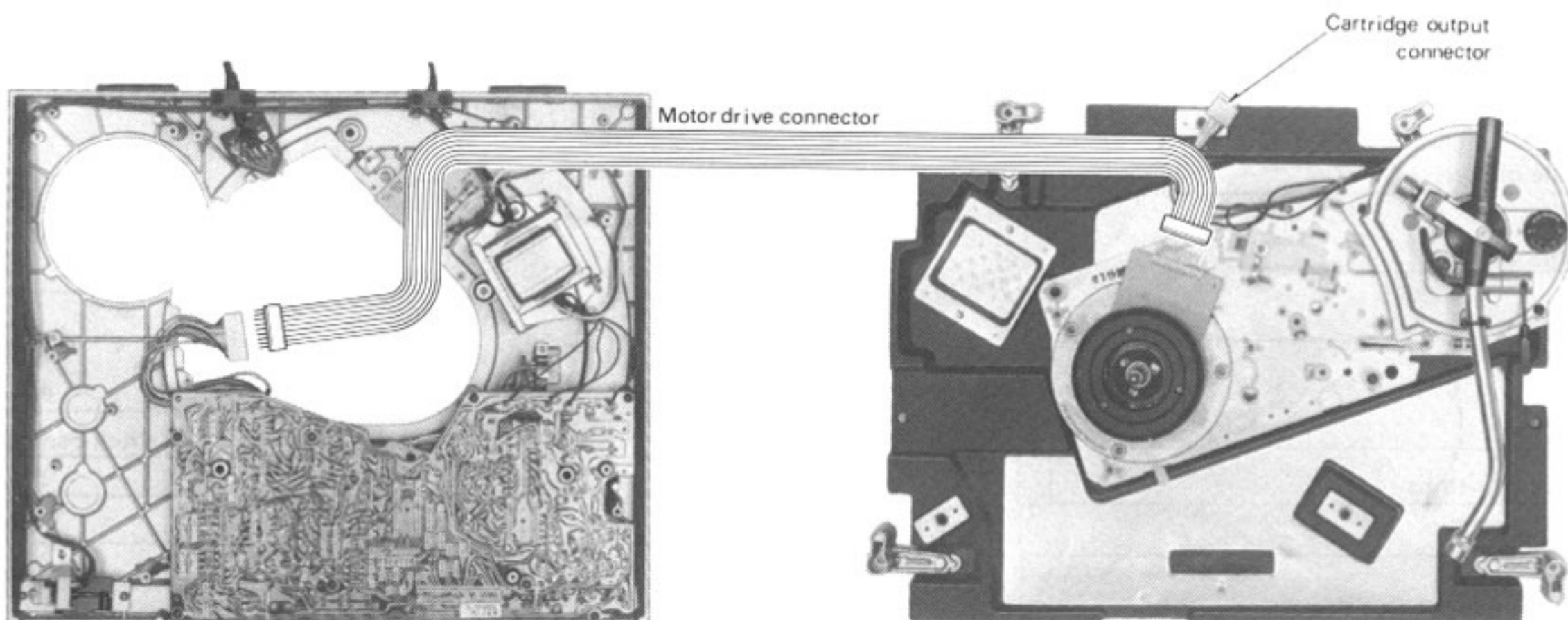
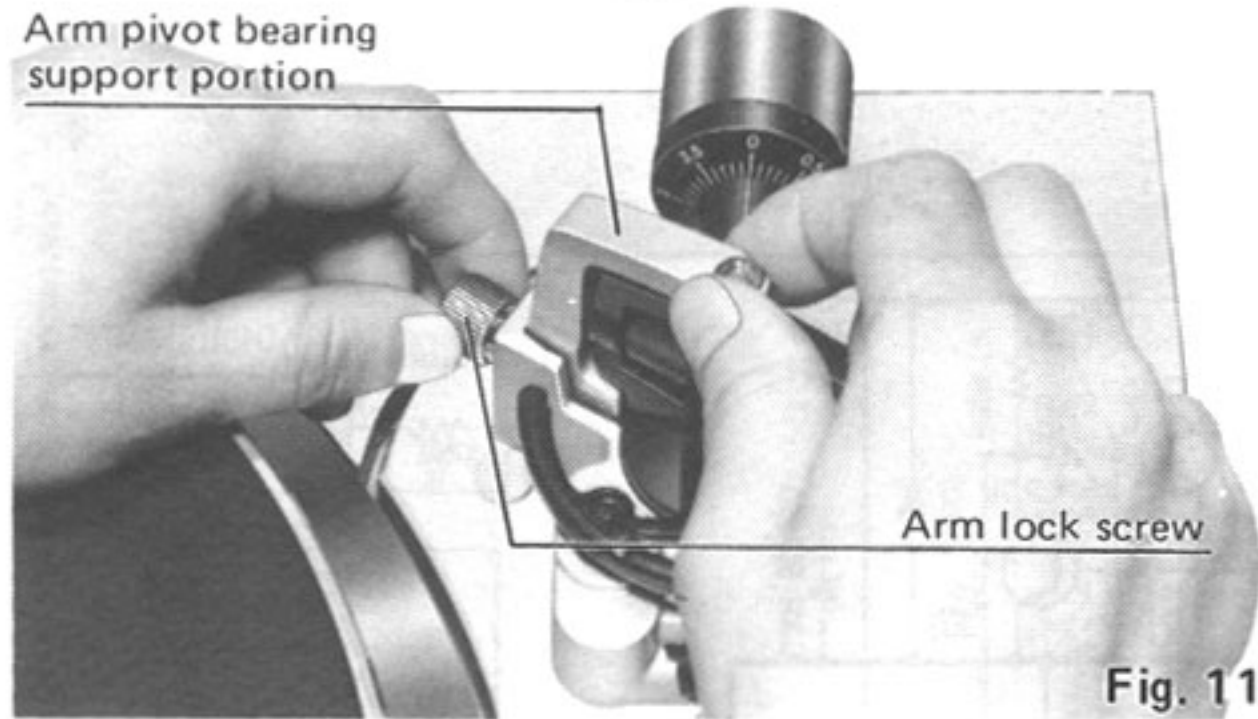


Fig. 10

## ■ 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.



- 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.

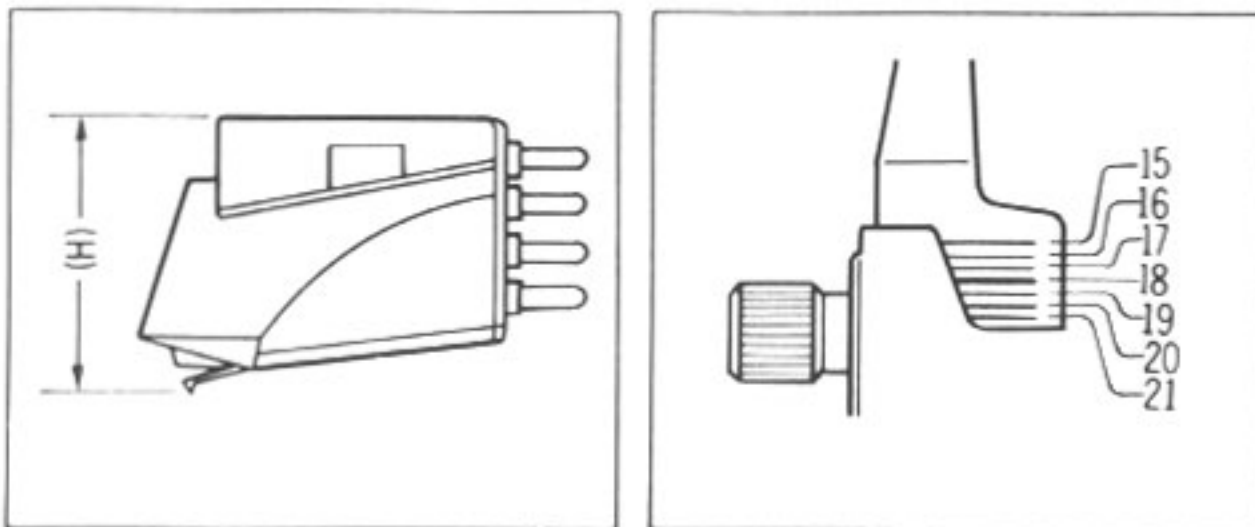


Fig. 12

### 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).

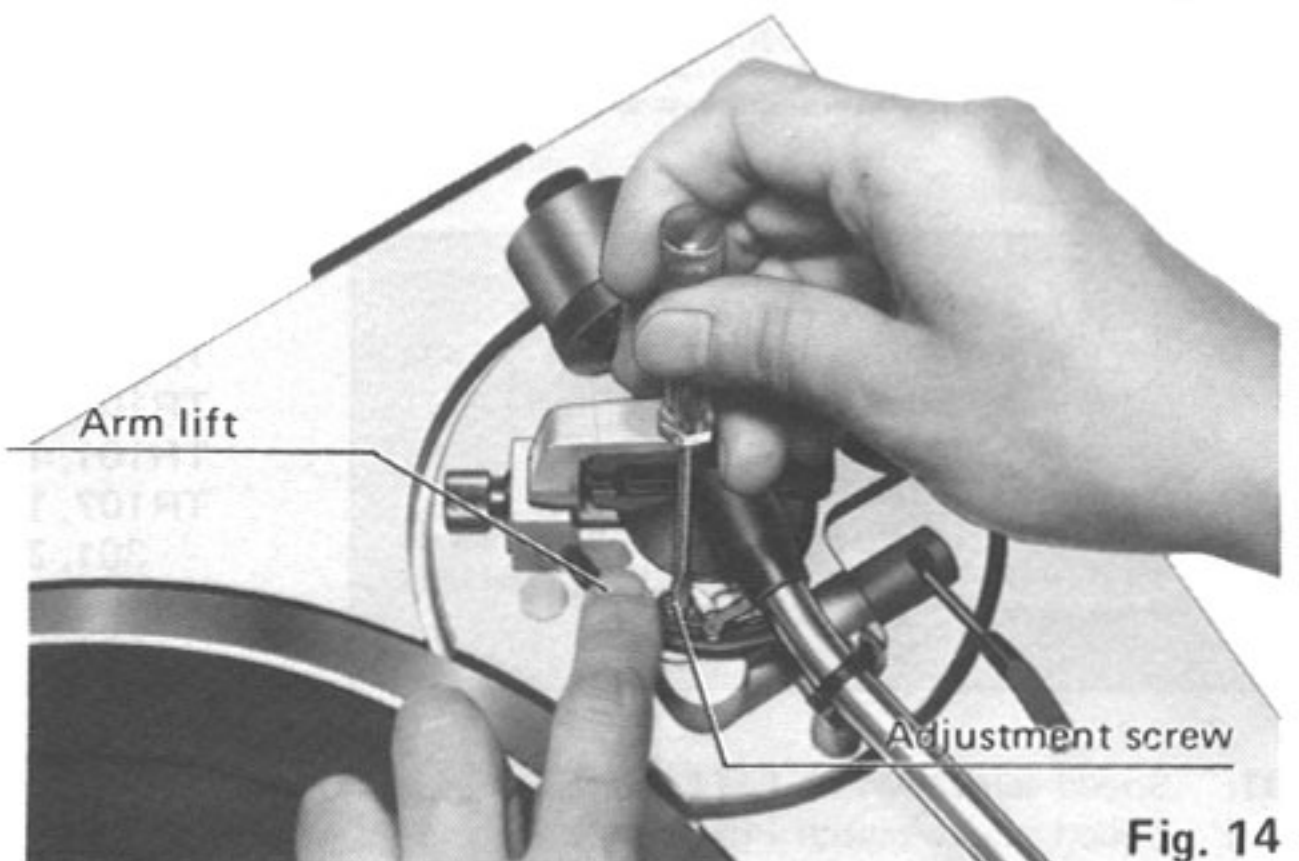
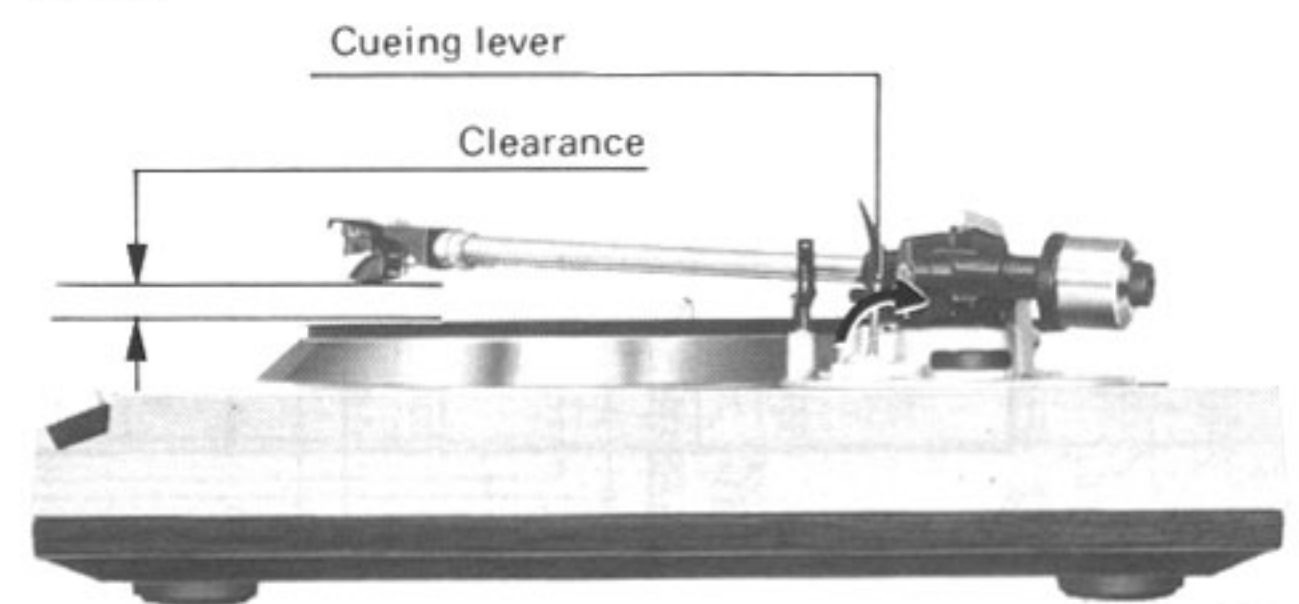
If the clearance becomes too narrow or too wide because of the physical size of the different cartridge on the market, turn the adjustment screw clockwise or counterclockwise, while pushing the arm lift down.

#### 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.



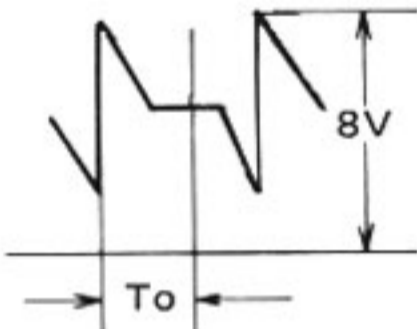
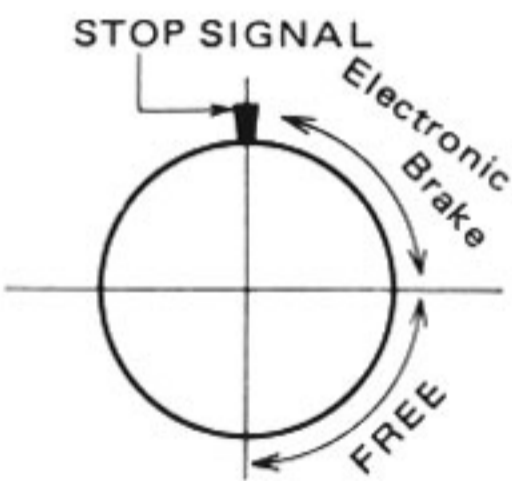
#### Note:

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.

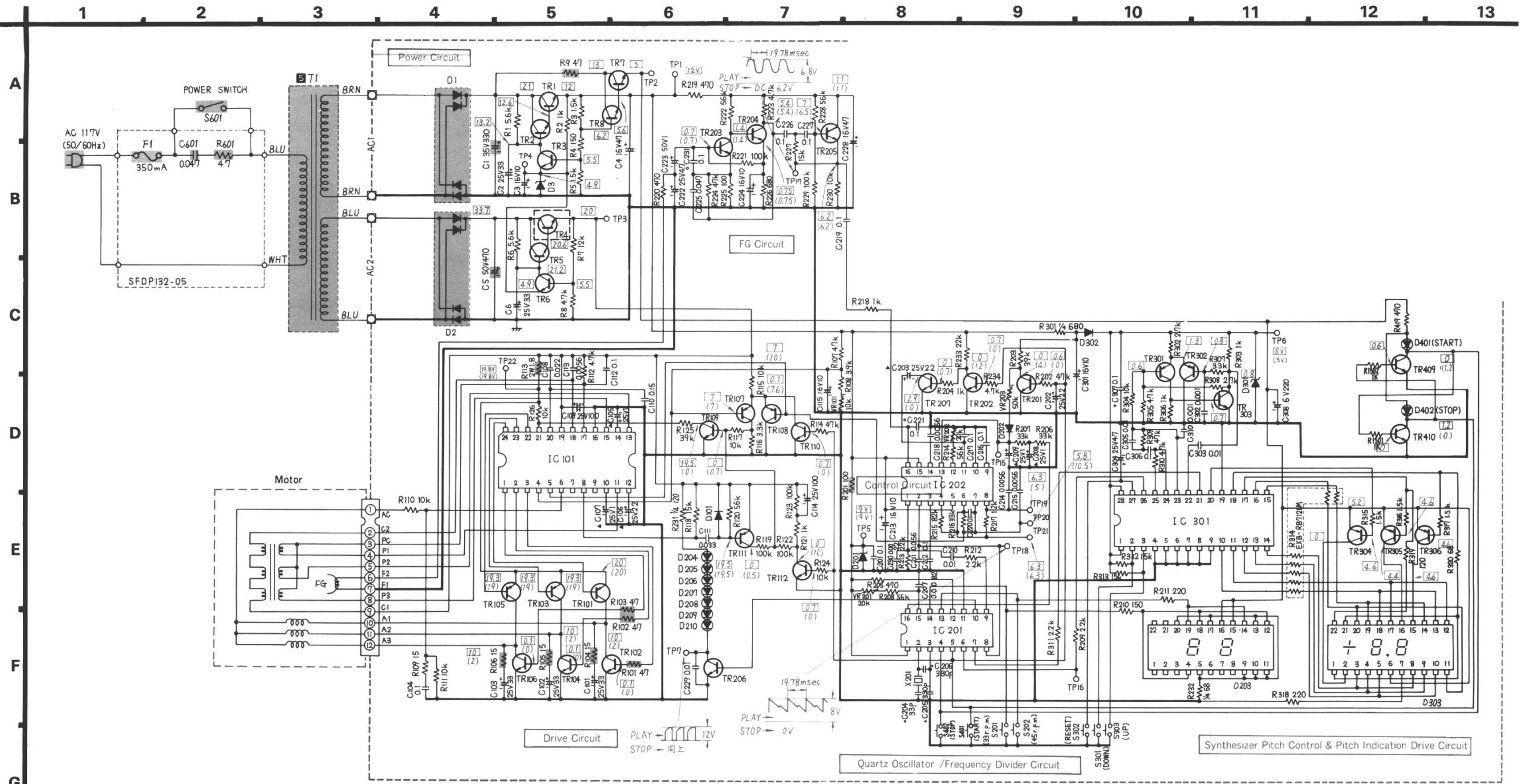
## ■ ADJUSTMENTS-2

### Adjustment Points of Electrical System

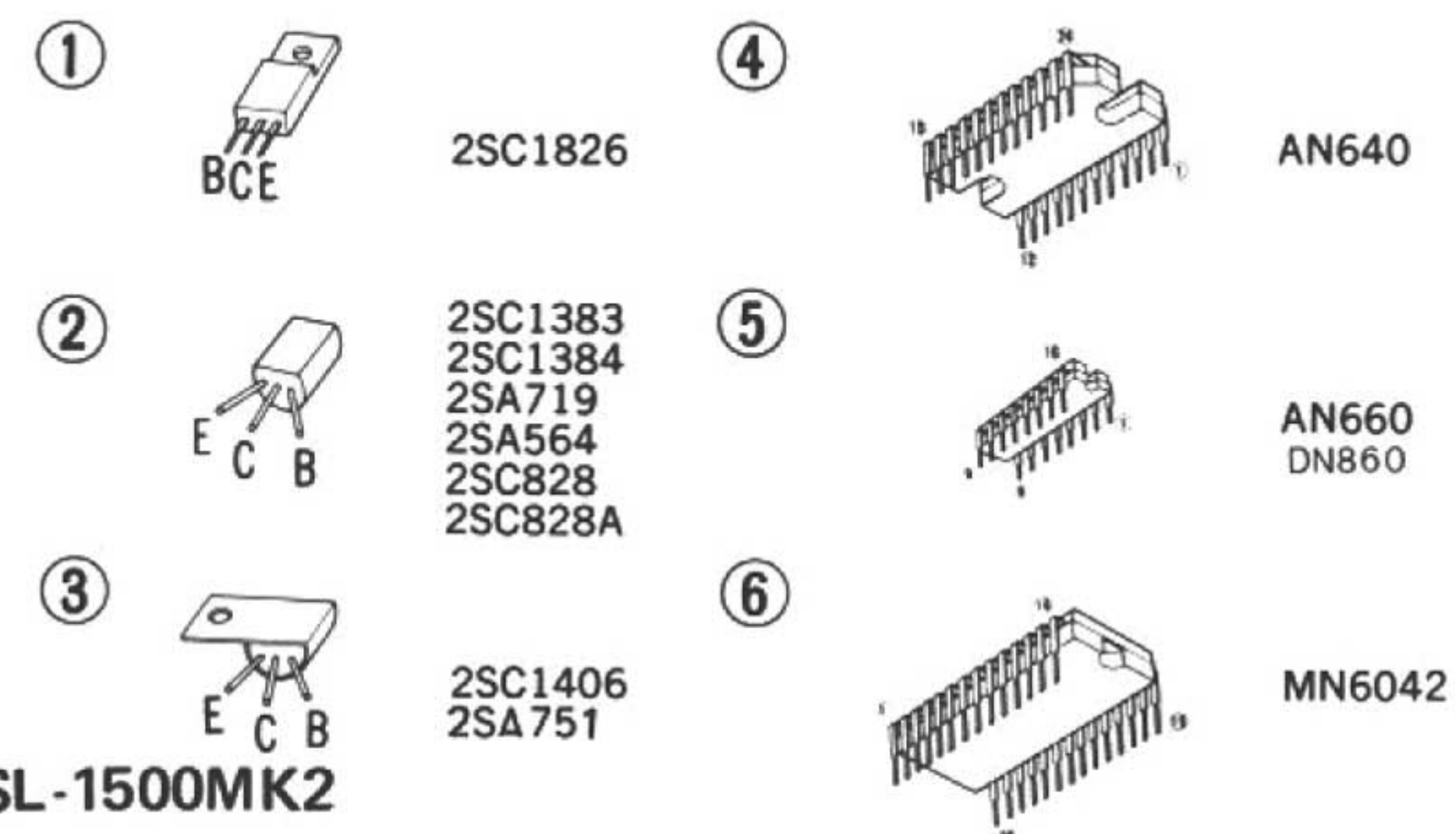
**NOTE:** Make the following adjustments after replacing parts such as IC's, transistors, diodes, etc.

	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	<b>TP18 waveform</b>  For 33 rpm . . . adjust VR101 for $8 \leq T_0 \leq 8.5$ ms. For 45 rpm . . . confirm that $5.8 \leq T_0 \leq 6.4$ 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



7 SL-1500MK2

## IMPORTANT SAFETY NOTICE

THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR SAFETY. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.

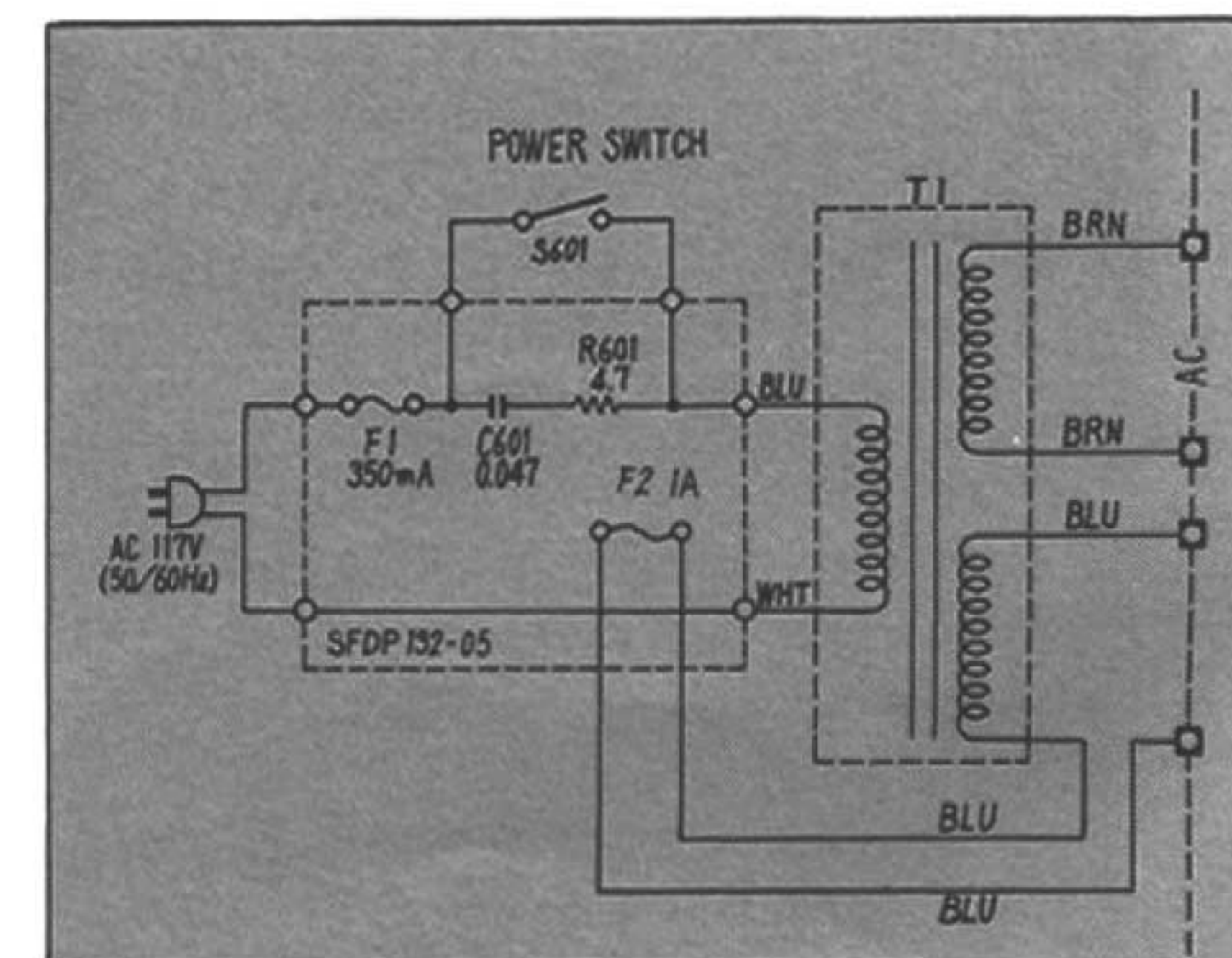
### Notes:

- S201: Speed select switch (33 r.p.m.)
- S202: Speed select switch (45 r.p.m.)
- S301: Pitch Control switch (Down)
- S302: Pitch Control switch (Reset)
- S303: Pitch Control switch (Up)
- S401: Start switch in "off" position.
- S402: Stop switch in "off" position.
- S601: Power switch in "off" position.
- The voltage values entered are the values measured from the chassis with a standard tester that has an internal resistance of 100KΩ/V.

8 SL-1500MK2

TR1, 4, 7	2SC1826
TR2, 3, 6, 8	2SC1328-T
TR5	2SC1384
TR102, 104, 106	2SC1406
TR101, 103, 105	2SA752
TR107, 107, 111	2SA666A1-R
TR109, 110, 112, 201 ~ 207, 303, 409, 410	2SC1328-T
TR304 ~ 306	2SA719
IC101	AN640
IC201	DN860
IC202	AN660
IC301	MN6042
D1, 2	SVDIR1BA20
D3, 301	SVDR5.1EBS
D101, 202, 302	MA150
D201	SVDR9.1EBS
D203	SVDGL-7R204
D204 ~ 210	SVDSR105C
D303	SVDGL-7R203
D401, 402	SVDSR105C

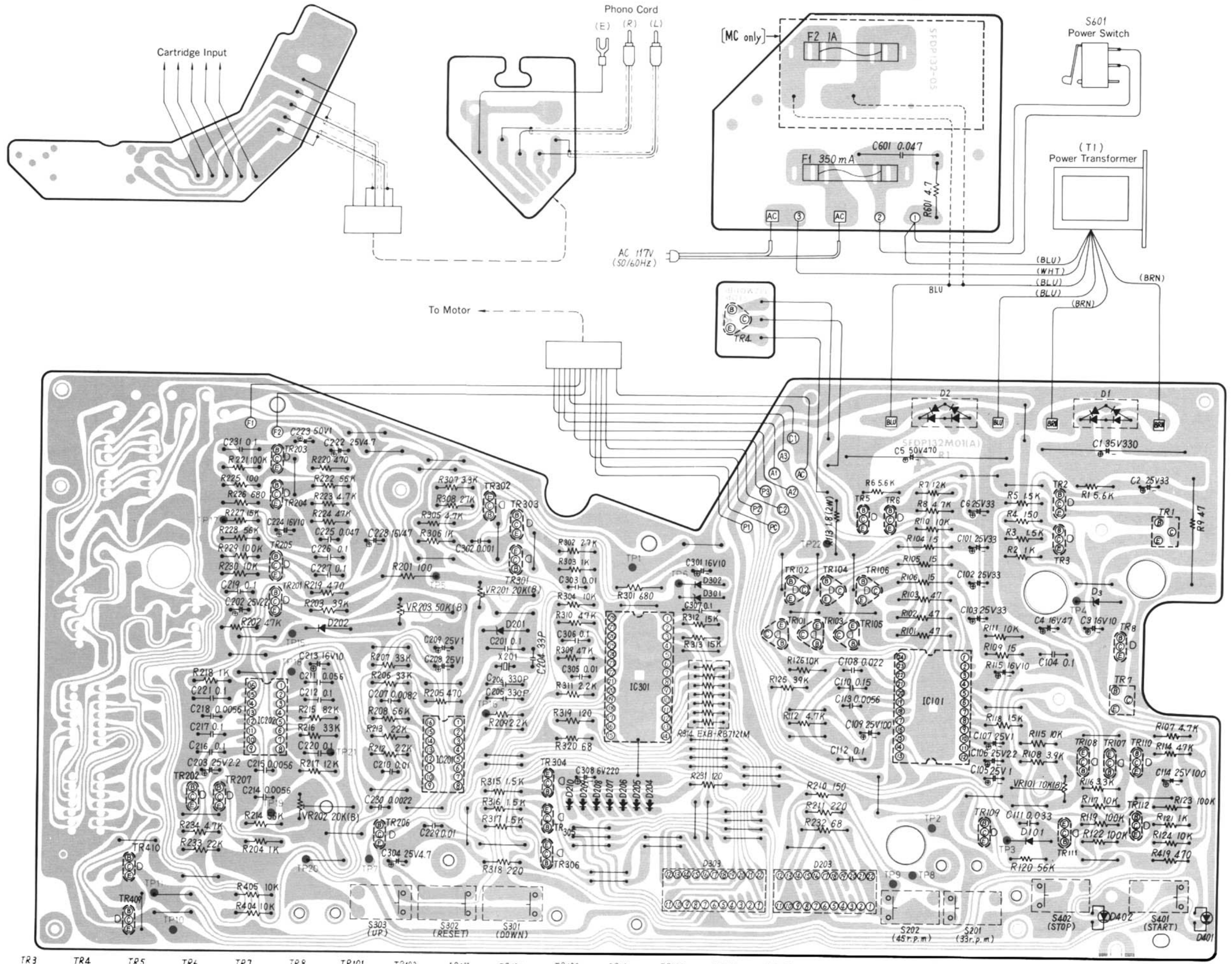
## ●Product for Canada (MC)



# Printed Circuit Board ..... SL-1500MK2

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

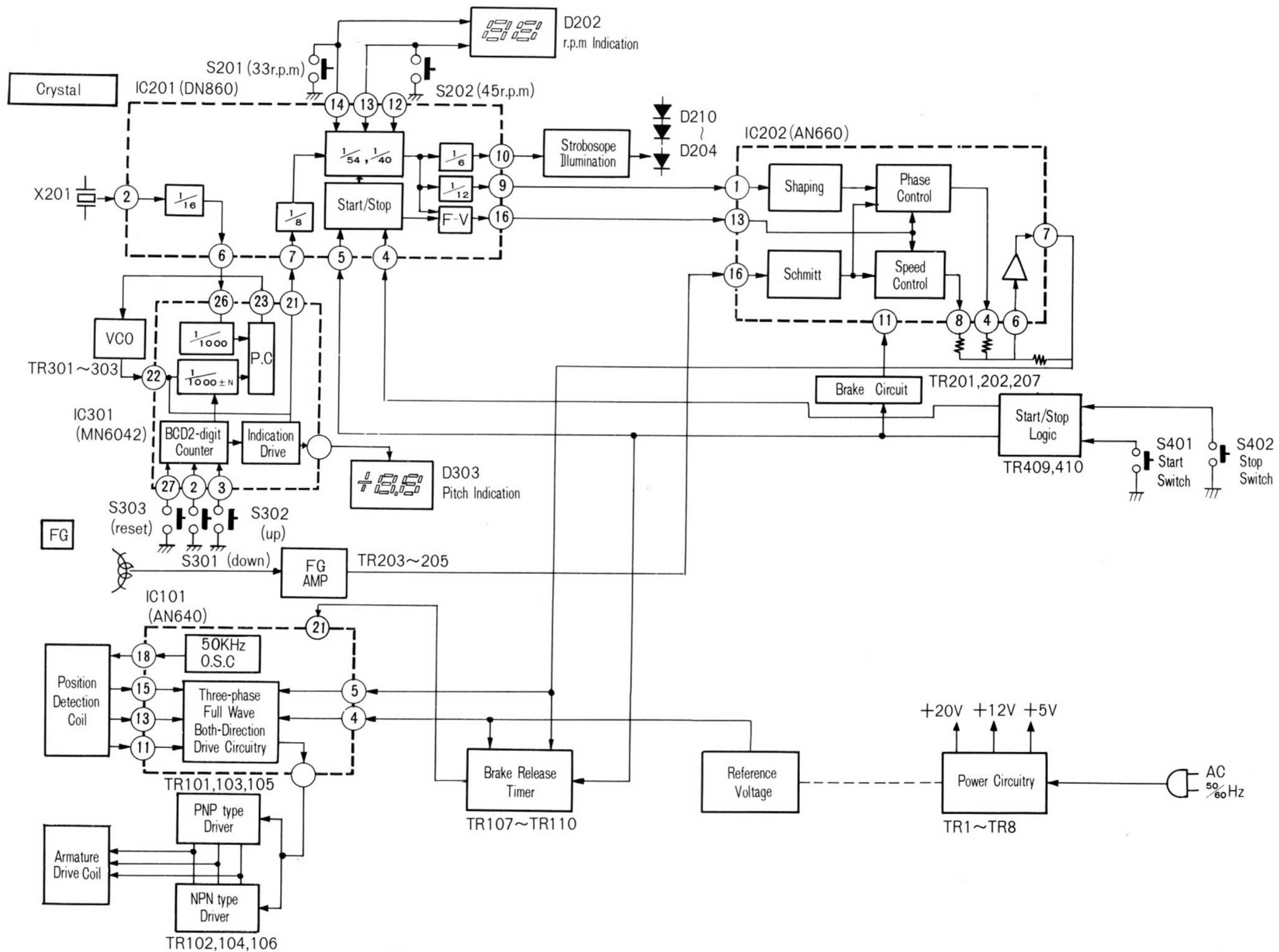
A  
B  
C  
D  
E  
F  
G  
H



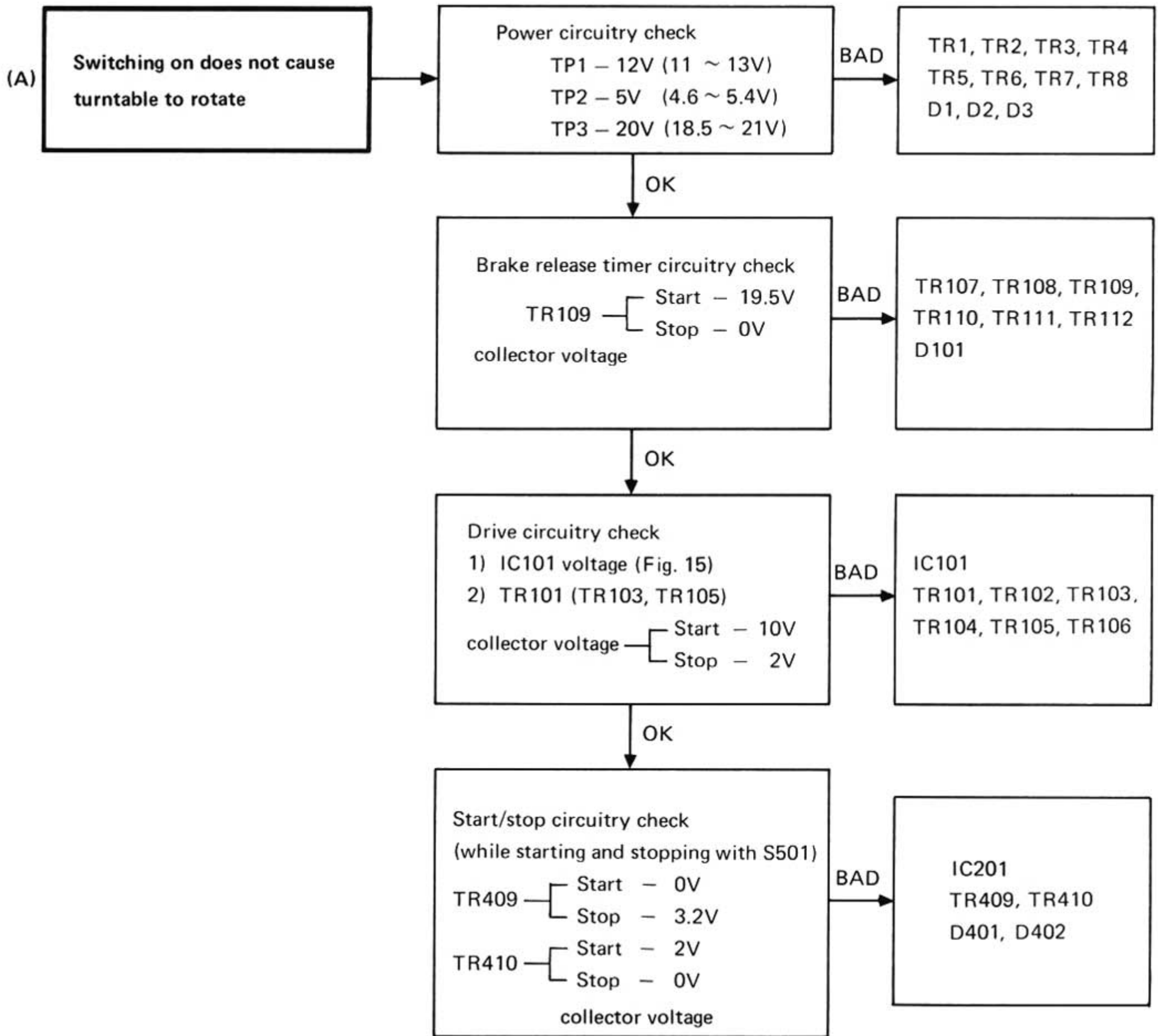
TR1 2SC1826 E 12 V C 21 V B 12.6 V	TR2 2SC828A E 12.6 V C 21 V B 13.2 V	TR3 2SC828A E 4.9 V C 13.2 V B 5.5 V	TR4 2SC1826 E 20 V C 33.7 V B 20.6 V	TR5 2SC1383 E 4.9 V C 21.2 V B 21.2 V	TR6 2SC828A E 4.9 V C 21.2 V B 5.5 V	TR7 2SC1826 E 5 V C 13.2 V B 5.6 V	TR8 2SC828A E 5.6 V C 13 V B 6.2 V	TR101 2SA751 E 20 V C 12 V B 19.3 V	TR102 2SC1406 E 0 V C 10 V B 21 V	TR103 2SA751 E 20 V C 10 V B 19.3 V	TR104 2SC1406 E 0 V C 10 V B 21 V	TR105 2SA751 E 20 V C 10 V B 19.3 V	TR106 2SC1406 E 0 V C 10 V B 21 V	TR107 2SA564 E 0 V C 6 V B 7 V	TR108 2SA564 E 0 V C 6 V B 7 V	TR109 2SC828 E 0 V C 19.5 V B 0 V	TR110 2SC828 E 0 V C 0 V B 0.7 V	TR111 2SA564 E 20 V C 0 V B 19.5 V	TR112 2SC828 E 0 V C 0 V B 0.7 V	TR201 2SC828 E 0 V C 0 V B 0.6 V	TR202 2SC828 E 0 V C 0 V B 0.7 V	TR203 2SC828 E 0 V C 1.4 V B 0.7 V	TR204 2SC828 E 0.75 V C 5.4 V B 1.4 V
TR205 2SC828 E 6.2 V C 11 V B 7 V	TR206 2SC828 E --- C --- B ---	TR207 2SC828 E 0 V C 2.9 V B 0 V	TR301 2SA564 E 1.3 V C 0.7 V B 0.6 V	TR302 2SA564 E 1.3 V C 0.7 V B 0.8 V	TR303 2SC828 E 0 V C 0.7 V B 0.7 V	TR304 2SA719 E 5.2 V C 4.2 V B 4.6 V	TR305 2SA719 E 5.2 V C 4.2 V B 4.6 V	TR306 2SA719 E 5.2 V C 4.2 V B 4.6 V	TR409 2SC828 E --- C --- B ---	TR411 2SC828 E 0 V C 4.2 V B 2 V													



# ■ BLOCK DIAGRAM



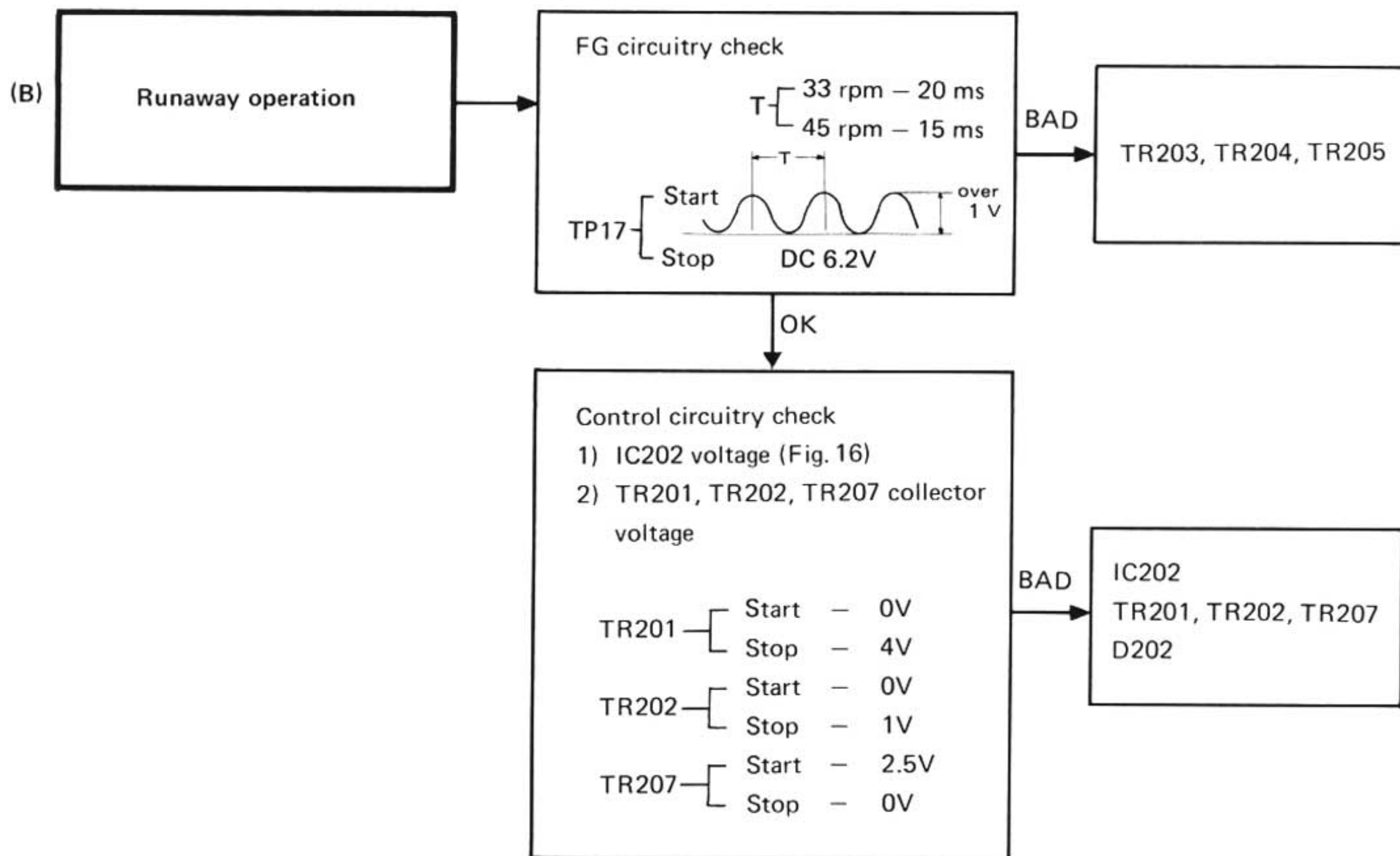
# ■ TROUBLE SHOOTING



Reference voltage of each pin of IC101

(Fig. 15)

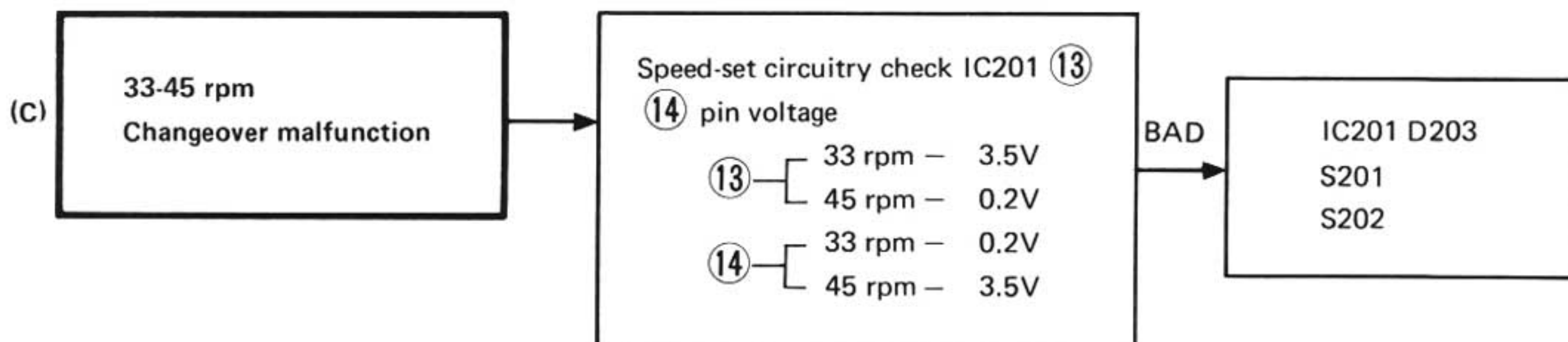
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①		0.1V	⑩		15.2V	⑰	15.5V	15.5V								
②									5.8V	6.1V	⑪		Same as at left	⑱		Same as at left
③																
④	4.7V	2.2V	⑬		15V	⑳	15.3V	1.4V								
⑤	4.9V	4.9V							⑭		15V	㉑	20.5V	16.4V		
⑥	20.5V	20.5V	⑮		0V	㉒	20V	20V								
⑦		0.2V						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

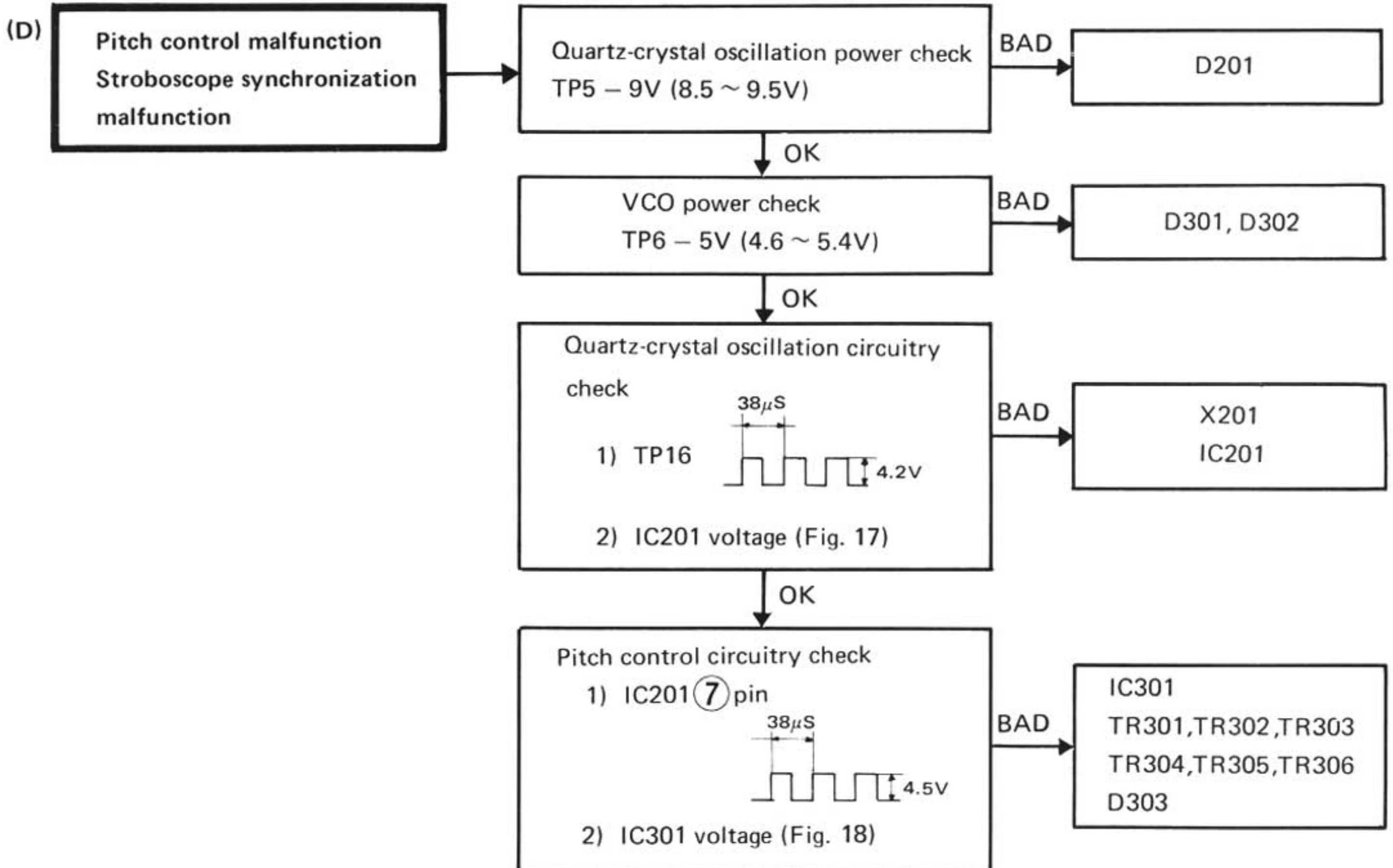


Reference voltage of each pin of IC202

(Fig. 16)

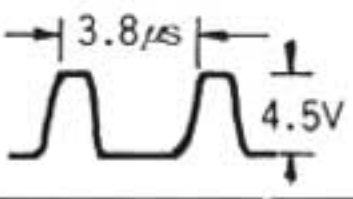
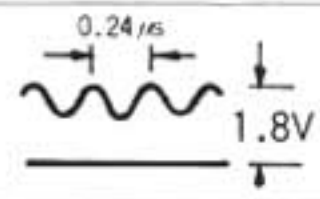
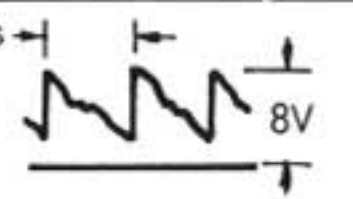
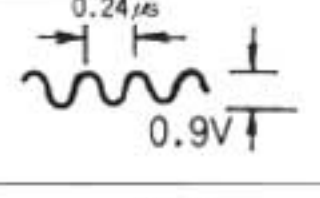

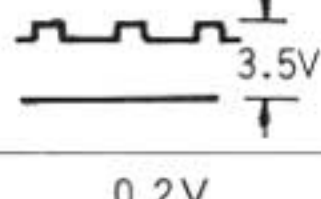
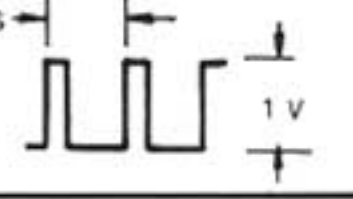

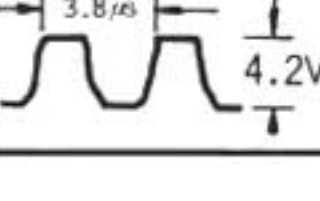
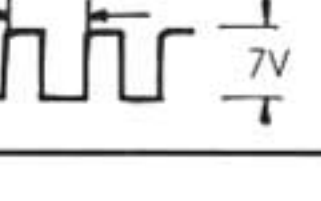
	Start	Stop		Start	Stop		Start	Stop
①		0 V	⑥	6.3V	6.3V	⑫	2.1V	2.7V
			⑦	5.8V	10.5V	⑬	2.1V	2.7V
②	Same at TP18	0 V	⑧	6.3V	5.0V	⑭		7.5V
③		6.1V	⑨		7.1V	⑮	11.7V	11.7V
			⑩	0 V	0 V	⑯		5.5V
④	6.6V	6.2V	⑪		7.5V			
⑤	11.7V	11.7V						





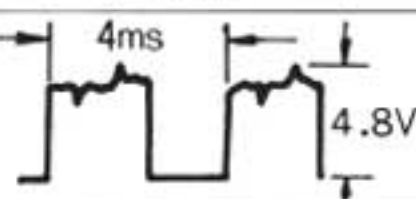
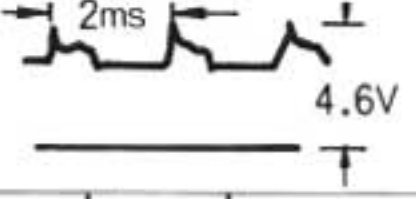
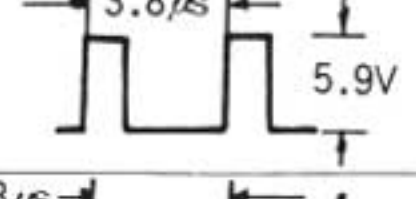
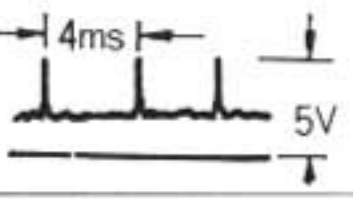

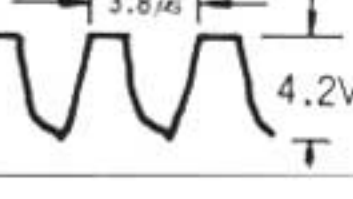
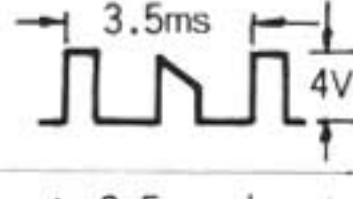
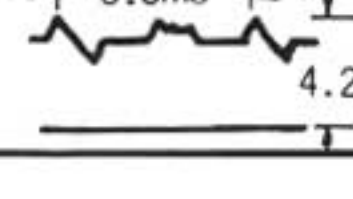
Reference voltage of each pin of IC201

(Fig. 17)

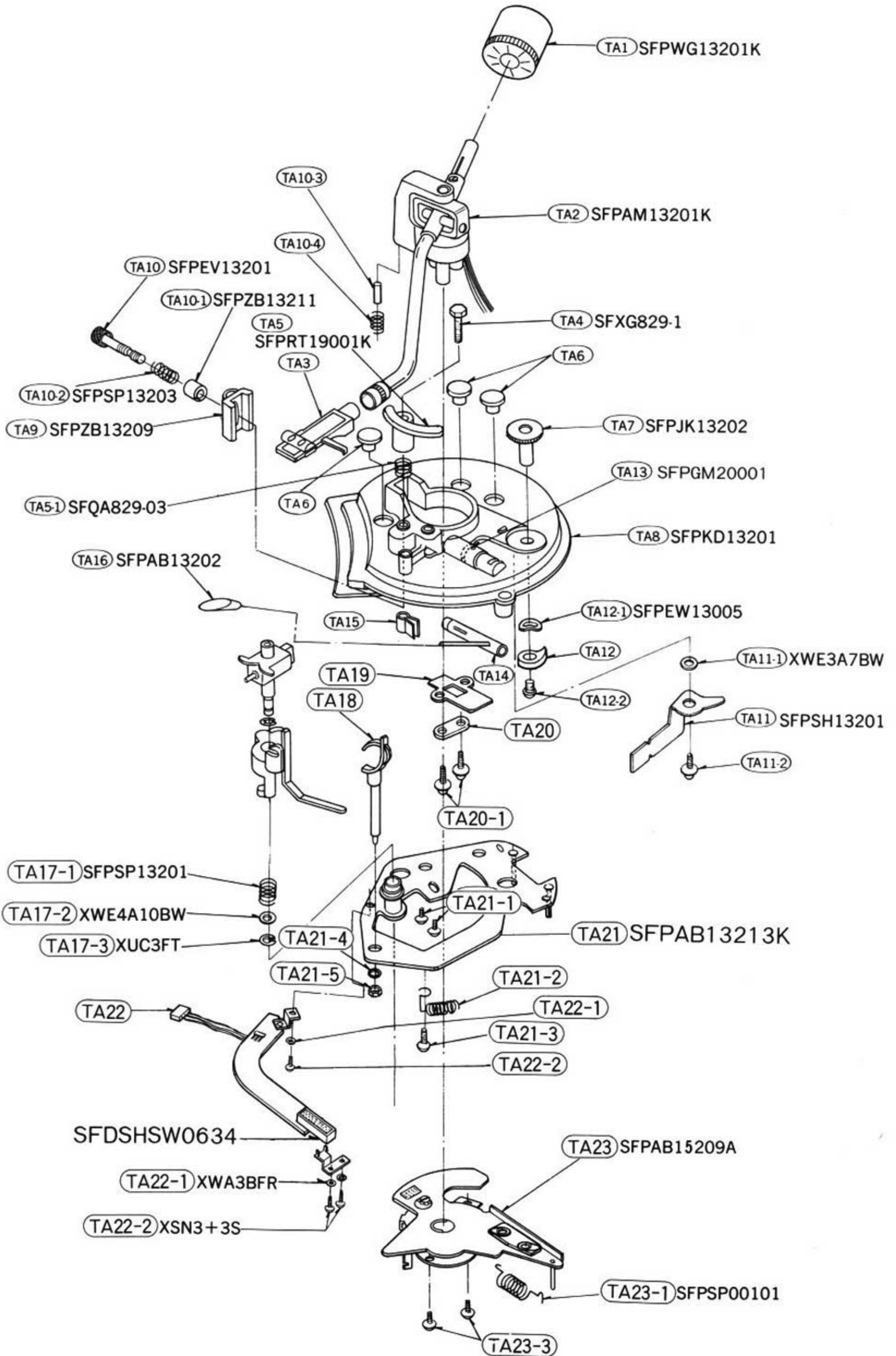
	Start	Stop		Start	Stop		Start	Stop
①	9.4V	9.4V			Same as at left	⑪	0V	0V
②		Same as at left	⑦		0V	⑫	6V	6V
③		Same as at left	⑧		4.3V	⑬		Same as at left
④	0V	3.2V	⑨		Same as at left	⑭	0.2V	0.2V
⑤	2.0V	0V	⑩			⑮		Same as at left
⑥		Same as at left				⑯		0V

Reference voltage of each pin of IC301

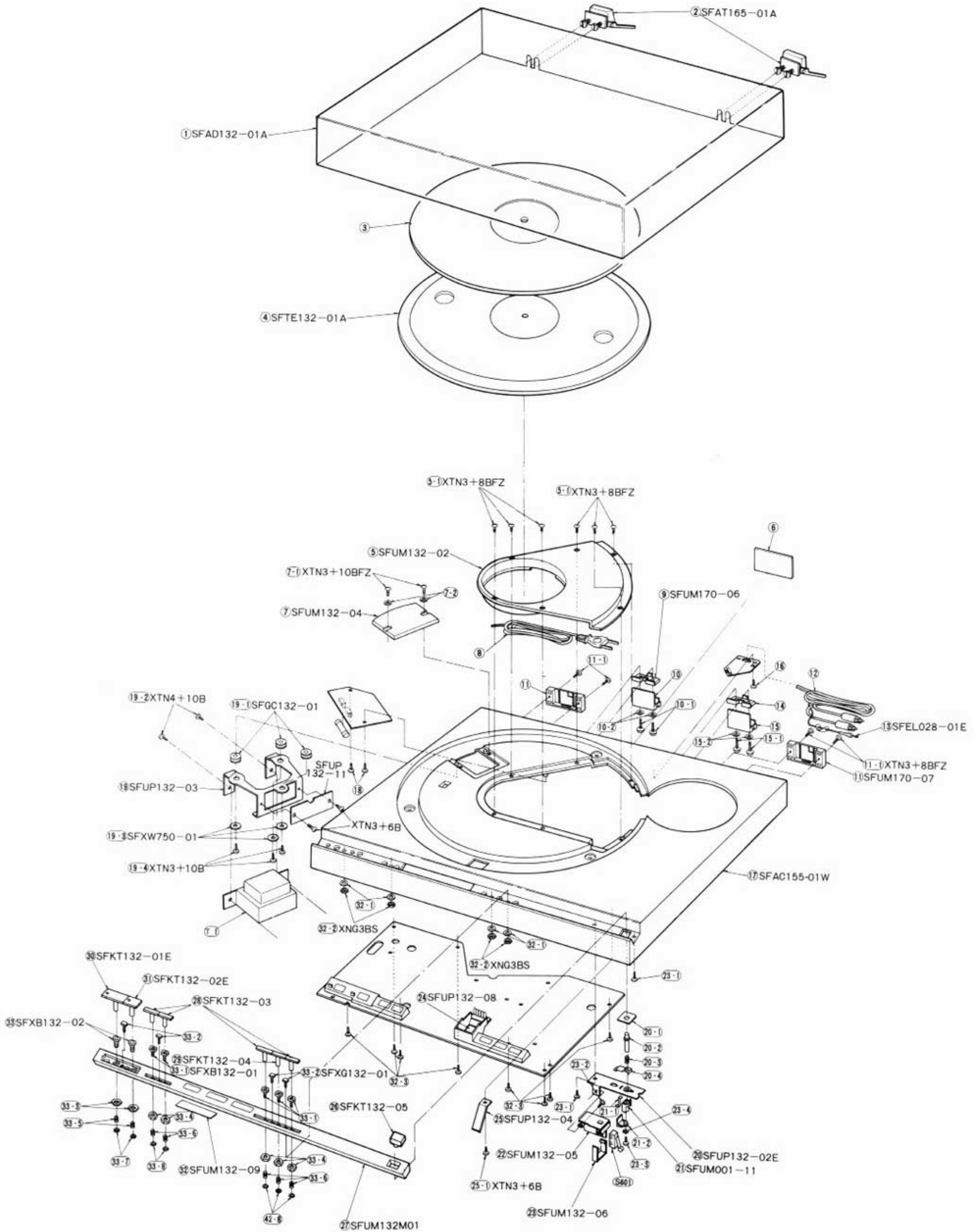
(Fig. 18)

	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			⑳		Same as at left	㉒		Same as at left
④	0V	0V	㉓		Same as at left	㉔		Same as at left
⑤			㉕		Same as at left	㉖	5V	5V
⑥			㉖		Same as at left	㉗	5V	5V
⑦			㉗			㉘	5V	5V

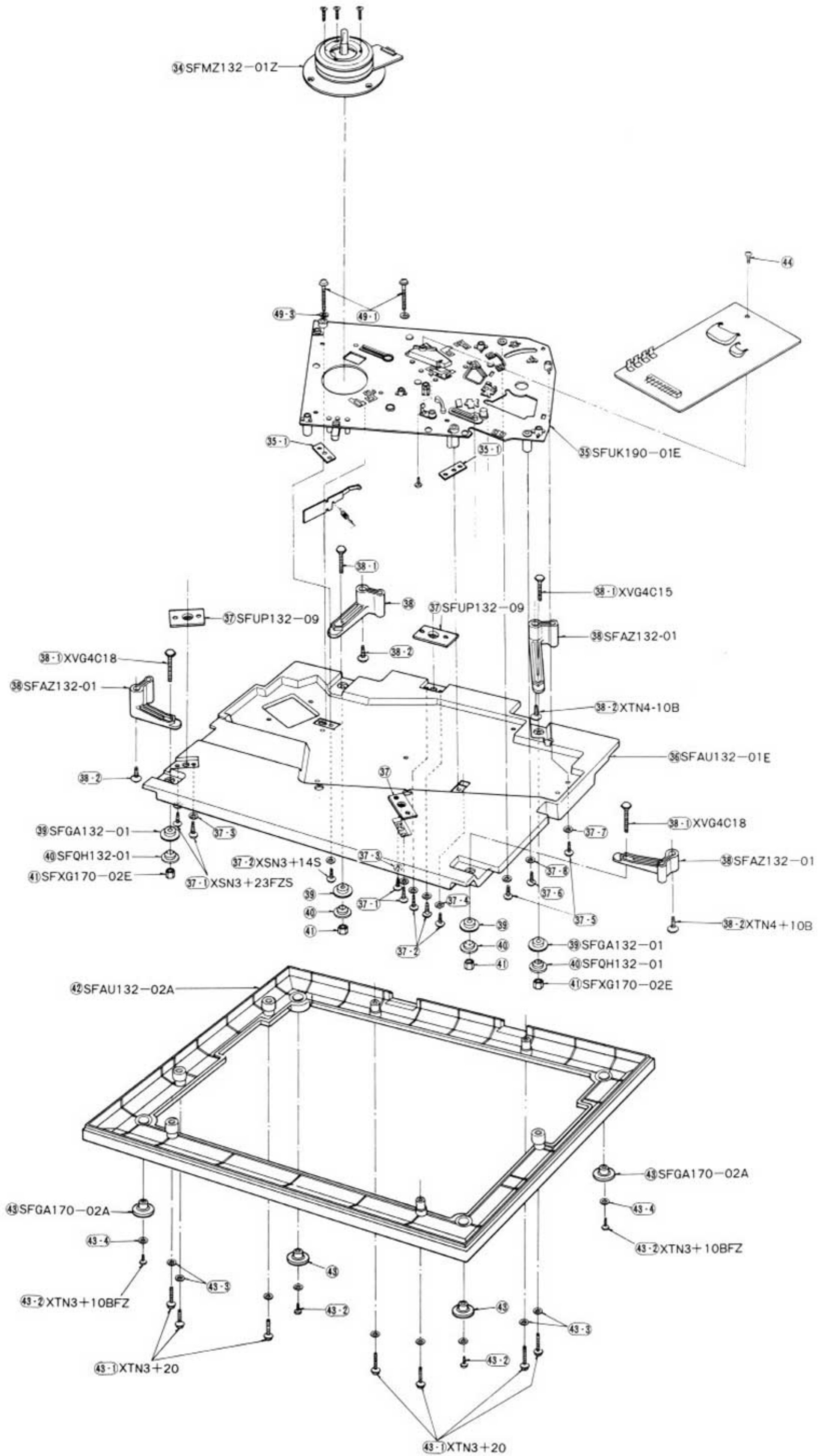
# EXPLODED VIEW



# 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[M] → [M]  
SL-1500MK2[MC] → [MC]

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
<b>INTEGRATED CIRCUITS</b>				
IC101	AN640	Drive Circuit	1	
IC201	DN860	Frequency Divider Circuit	1	
IC202	AN660	Control Circuit	1	
IC301	MN6042	Pitch Control Circuit	1	
<b>TRANSISTORS</b>				
TR1, 4, 7	<b>2SC1826-Y</b>	Transistors (Use in ranks O or Y or G)	3	
TR2, 3, 6, 8,	2SC1328G	Transistors	4	
TR5	<b>2SC1384A-Q</b>	Transistor (Use in ranks Q or R or S)	1	
TR101	<b>2SA752-Q</b>	Transistor (Use in pair ranks Q or R or S)	1	
TR102	<b>2SC1406-Q</b>	Transistor (Use in pair ranks Q or R or S)	1	
TR103	<b>2SA752-Q</b>	Transistor (Use in pair ranks Q or R or S)	1	
TR104	<b>2SC1406-Q</b>	Transistor (Use in pair ranks Q or R or S)	1	
TR105	<b>2SA752-Q</b>	Transistor (Use in pair ranks Q or R or S)	1	
TR106	<b>2SC1406-Q</b>	Transistor (Use in pair ranks Q or R or S)	1	
TR107, 108, 111	<b>2SA666A1-R</b>	Transistor (Use in ranks Q or R or S)	5	
301, 302				
TR109, 110, 112,	<b>2SC1328-T</b>	Transistor	13	
201, 202, 203,				
204, 205, 206,				
207, 303, 409,				
410				
TR304, 305, 306	<b>2SA719-P</b>	Transistors (Use in ranks P or Q or R or S)	3	
<b>DIODES</b>				
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	SVDGL-7R204	Light Emitting Diode (r.p.m)	1	
D204, 205, 206,	SVDSR105C	Light Emitting Diode	9	
207, 208, 209,				
210, 401, 402				
D303	SVDGL-7R203	Light Emitting Diode (pitch)	1	
<b>CRYSTAL</b>				
X204	SVQU306115	4.19328MHz Oscillator	1	
<b>TRANSFORMER</b>				
T1	SLT60EU3B	Power Transformer	1	
<b>FUSE</b>				
F1	XBA2E04NU100	400mA (Fuse)	1	
F2 [MC only]	XBA2E10NU100	1A (Fuse)	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
<b>SWITCHES</b>				
S201, 202	EVQP4R04K	Speed Selector Switches	2	
S301, 302, 303	EVQP4R04K	Pitch Control Switches	3	
S401, 402	EVQP4R04K	Start or Stop Switches	2	
S601	SFDSSS5GL2	Power Switch	1	
	SFDSSHW0634	Switch, Muting	1	
<b>RESISTORS</b>				
R1	<b>ERD25TJ562</b>	Carbon, 5.6kΩ, 1/4W, ± 5%	1	
R2	<b>ERD25TJ102</b>	Carbon, 1kΩ, 1/4W, ± 5%	1	
R3	<b>ERD25TJ152</b>	Carbon, 1.5kΩ, 1/4W, ± 5%	1	
R4	<b>ERD25TJ151</b>	Carbon, 150Ω, 1/4W, ± 5%	1	
R5	<b>ERD25TJ152</b>	Carbon, 1.5kΩ, 1/4W, ± 5%	1	
R6	<b>ERD25TJ562</b>	Carbon, 5.6kΩ, 1/4W, ± 5%	1	
R7	<b>ERD25TJ123</b>	Carbon, 12kΩ, 1/4W, ± 5%	1	
R8	<b>ERD25TJ472</b>	Carbon, 4.7kΩ, 1/4W, ± 5%	1	
R9	<b>ERG3ANJ470</b>	Metal Film, 47Ω, 3W, ± 5%	1	
R101, 102, 103	<b>ERX1ANJ470</b>	Metal Film, 47Ω, 1W, ± 5%	3	
R104, 105, 106	<b>ERX1ANJ150</b>	Metal Film, 15Ω, 1W, ± 5%	3	
R107	<b>ERD25TJ472</b>	Carbon, 4.7kΩ, 1/4W, ± 5%	1	
R108	<b>ERD25TJ392</b>	Carbon, 3.9kΩ, 1/4W, ± 5%	1	
R109	<b>ERD25TJ150</b>	Carbon, 15Ω, 1/4W, ± 5%	1	
R110, 111	<b>ERD25TJ103</b>	Carbon, 10kΩ, 1/4W, ± 5%	2	
R112	<b>ERD25TJ472</b>	Carbon, 4.7kΩ, 1/4W, ± 5%	1	
R113	<b>ERX1ANJ1R8</b>	Metal Film, 1.8Ω, 1W, ± 5%	1	
R114	<b>ERD25TJ473</b>	Carbon, 47kΩ, 1/4W, ± 5%	1	
R115	<b>ERD25TJ103</b>	Carbon, 10kΩ, 1/4W, ± 5%	1	
R116	<b>ERD25TJ332</b>	Carbon, 3.3kΩ, 1/4W, ± 5%	1	
R117	<b>ERD25TJ103</b>	Carbon, 10kΩ, 1/4W, ± 5%	1	
R118	<b>ERD25TJ153</b>	Carbon, 15kΩ, 1/4W, ± 5%	1	
R119	<b>ERD25TJ104</b>	Carbon, 100kΩ, 1/4W, ± 5%	1	
R120	<b>ERD25TJ563</b>	Carbon, 56kΩ, 1/4W, ± 5%	1	
R121	<b>ERD25TJ102</b>	Carbon, 1kΩ, 1/4W, ± 5%	1	
R122, 123	<b>ERD25TJ104</b>	Carbon, 100kΩ, 1/4W, ± 5%	2	
R124	<b>ERD25TJ103</b>	Carbon, 10kΩ, 1/4W, ± 5%	1	
R125	<b>ERD25TJ393</b>	Carbon, 39kΩ, 1/4W, ± 5%	1	
R126	<b>ERD25TJ103</b>	Carbon, 10kΩ, 1/4W, ± 5%	1	
R201	<b>ERX1ANJ101</b>	Metal Film, 100Ω, 1W, ± 5%	1	
R202	<b>ERD25TJ473</b>	Carbon, 47kΩ, 1/4W, ± 5%	1	
R203	<b>ERD25TJ393</b>	Carbon, 39kΩ, 1/4W, ± 5%	1	
R204	<b>ERD25TJ102</b>	Carbon, 1kΩ, 1/4W, ± 5%	1	
R205	<b>ERD25TJ471</b>	Carbon, 470Ω, 1/4W, ± 5%	1	
R206, 207	<b>ERD25TJ333</b>	Carbon, 33kΩ, 1/4W, ± 5%	2	
R208	<b>ERD25TJ563</b>	Carbon, 56kΩ, 1/4W, ± 5%	1	
R209	<b>ERD25TJ222</b>	Carbon, 2.2kΩ, 1/4W, ± 5%	1	
R210	<b>ERD25TJ151</b>	Carbon, 150Ω, 1/4W, ± 5%	1	
R211	<b>ERD25TJ221</b>	Carbon, 220Ω, 1/4W, ± 5%	1	
R212	<b>ERD25TJ222</b>	Carbon, 2.2kΩ, 1/4W, ± 5%	1	
R213	<b>ERD25TJ223</b>	Carbon, 22kΩ, 1/4W, ± 5%	1	
R214	<b>ERD25TJ563</b>	Carbon, 56kΩ, 1/4W, ± 5%	1	
R215	<b>ERD25TJ823</b>	Carbon, 82kΩ, 1/4W, ± 5%	1	
R216	<b>ERD25TJ333</b>	Carbon, 33kΩ, 1/4W, ± 5%	1	
R217	<b>ERD25TJ123</b>	Carbon, 12kΩ, 1/4W, ± 5%	1	
R218	<b>ERD25TJ102</b>	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, 4.7kΩ, 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, 4.7kΩ, 1/4W, ± 5%	1	
R301	ERD25TJ391	Carbon, 390Ω, 1/4W, ± 5%	1	
R302	ERD25TJ272	Carbon, 2.7kΩ, 1/4W, ± 5%	1	
R303	ERD25TJ102	Carbon, 1kΩ, 1/4W, ± 5%	1	
R304	ERD25TJ103	Carbon, 10kΩ, 1/4W, ± 5%	1	
R305	ERD25TJ472	Carbon, 4.7kΩ, 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	EXBRB7121M	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	
<b>VARIABLE RESISTORS</b>				
VR101	EVLS3AA00B14	Period Adjustment	1	
VR201	EVLS3AA00B24	VS Adjustment	1	
VR202	EVLS3AA00B24	IR Adjustment	1	
VR203	EVLS3AA00B54	Brake Adjustment	1	
<b>CAPACITORS</b>				
C1	ECEB35V330	Electrolytic, 330μF, 35V	1	
C2	ECEA25V33	Electrolytic, 33μF, 25V	1	
C3	ECEA16V10	Electrolytic, 10μF, 16V	1	
C4	ECEA16V47	Electrolytic, 47μF, 16V	1	
C5	ECEB50V470	Electrolytic, 470μF, 50V	1	
C6	ECEA25V33	Electrolytic, 33μF, 25V	1	
C101, 102, 103	ECEA25V33	Electrolytic, 33μF, 25V	3	
C104	ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C105	ECSZ25EF1	Electrolytic, 1μF, 25V	1	
C106	ECSZ25EF2R2	Electrolytic, 2.2μF, 25V	1	
C107	ECSZ25EF1	Electrolytic, 1μF, 25V	1	
C108	ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%	1	
C109	ECEA25Z100	Electrolytic, 100μF, 25V	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C110	ECQM05154KZ	Polyester, 0.15μF, 50V, ±10%	1	
C111	ECQM1H333KZ	Polyester, 0.033μF, 50V, ±10%	1	
C112	ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C113	ECQM1H562KZ	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	ECQM1H822KZ	Polyester, 0.0082μF, 50V, ±10%	1	
C208, 209	ECSZ25EF1	Electrolytic, 1μF, 25V	2	
C210	ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%	1	
C211	ECQM1H563KZ	Polyester, 0.056μF, 50V, ±10%	1	
C212	ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C213	ECEA16V10	Electrolytic, 10μF, 16V	1	
C214	ECQM1H562KZ	Polyester, 0.0056μF, 50V, ±10%	1	
C215	ECQM1H562KZ	Polyester, 0.0056μF, 50V, ±10%	1	
C216, 217	ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C218	ECQM1H562KZ	Polyester, 0.0056μF, 50V, ±10%	1	
C219, 220	ECQM1H104KZ	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, 50V	1	
C225	ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%	1	
C226, 227	ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%	2	
C228	ECEA16V47	Electrolytic, 47μF, 16V	1	
C229	ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%	1	
C230	ECQM1H102KZ	Polyester, 0.001μF, 50V, ±10%	1	
C231	ECKD1E104ZFZ	Ceramic, 0.1μF, 50V	1	
C301	ECEA16V10	Electrolytic, 10μF, 16V	1	
C302	ECQM1H102KZ	Polyester, 0.001μF, 50V, ±10%	1	
C303	ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%	1	
C304	ECEA50V4R7	Electrolytic, 4.7μF, 50V	1	
C305	ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%	1	
C306	ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%	1	
C307	ECKD1E104ZFZ	Ceramic, 0.1μF, 50V	1	
C308	ECEA6V220	Electrolytic, 220μF, 6V	1	
C310	ECQM1H102KZ	Polyester, 0.001μF, 50V, ±10%	1	
C601 [M]	ECQF1A473MD	Polyester, 0.047μF, 125V, ±20%	1	
C601 [MC]	ECQU1A473MC	Polyester, 0.047μF, 125V, ±20%	1	
<b>CABINET and CHASSIS PARTS</b>				
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	SFTE132-01A	Turntable	1	
5	SFUM132-02	Cover, Panel	1	
5-1	XTN3+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	<b>XTN3+10BFZ</b>	Screw, Transformer Cover	2	
7-2	<b>XWG3</b>	Washer, Transformer Cover	2	
8	<b>RJA10A</b>	<b>AC Cord</b>	1	
9	SFUM170-06	Spacer, AC Power Cord	1	
10	SFUM170-05	Bracket, AC Power Cord	1	
10-1	<b>XTN3+14BFZ</b>	Screw, AC Cord Bracket	2	
10-2	<b>XWG3</b>	Washer, AC Cord Bracket	2	
11	SFUM170-07	Case, Hinge Ass'y	2	
11-1	<b>XTN3+8BFZ</b>	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	<b>XTN3+14BFZ</b>	Screw, Phono Cord Bracket	2	
15-2	<b>XWG3</b>	Washer, Phono Cord Bracket	2	
16	<b>XTN3+8B</b>	Screw, Phono Cord P.C.B.	1	
17	SFAC155-01W	Cabinet	1	○
17-1	SFUZ132-03	Sheet, Panel Cover	1	○
18	<b>XTN3+8B</b>	Screw, P.C.B.	2	
19	SFUP132-03	Bracket, Power Transformer	1	
19-1	SFGC132-01	Spacer (Rubber), Power Transformer Bracket	3	
19-2	<b>XTN4+10B</b>	Screw, Power Transformer	2	
19-3	SFXW750-01	Washer, Power Transformer Bracket	3	
19-4	<b>XTN3+10B</b>	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	<b>XTN3+8B</b>	Screw, Power Switch Bracket	2	
23-2	<b>XTN3+16B</b>	Screw, Power Switch Holder	1	
23-3	<b>XSN3+10S</b>	Screw, Power Switch Cam	1	
23-4	<b>XWC3B</b>	Washer, Power Switch Cam	1	
24	SFUP132-08	Mirror	1	
25	SFUP132-04	Bracket, Panel	1	
25-1	<b>XTN3+6B</b>	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	<b>XWA3B</b>	Washer, Panel	4	
32-2	<b>XNG3BS</b>	Nut, Panel	4	
32-3	<b>XTN3+8B</b>	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	<b>XNS6JM</b>	Nut, Operation Spacer	2	
33-4	<b>XNG4HS1</b>	Nut, Operation Spacer	5	
33-5	SFQA132-01	Spring, Operation Knob	2	
33-6	SFQA132-02	Spring, Operation Knob	5	
33-7	<b>XUC3FT</b>	Circlip, Operation Knob	2	
33-8	<b>XUC25FT</b>	Circlip, Operation Knob	5	
34	SFMZ132-01Z	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	<b>XSN3+23FZS</b>	Screw, Main Base Bracket	4	
37-2	<b>XSN3+14S</b>	Screw, Main Base Bracket	4	
37-3	<b>XWG3</b>	Washer, Main Base Bracket	4	
37-4	<b>XWG3</b>	Washer, Main Base Bracket	4	
37-5	<b>XTN4+35B</b>	Screw, Main Base	2	
37-6	<b>XTN3+35B</b>	Screw, Main Base	6	
37-7	<b>XWG4</b>	Washer, Main Base	2	
37-8	<b>XWG3</b>	Washer, Main Base	6	
38	SFAZ132-01	Insulator (A)	4	
38-1	XVG4C18	Screw, Insulator (A)	4	
38-2	<b>XTN4+10B</b>	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	<b>XTN3+20</b>	Screw, Bottom Cover	7	
43-2	<b>XTN3+10BFZ</b>	Screw, Insulator (B)	4	
43-3	<b>XWG3</b>	Washer, Bottom Cover	7	
43-4	<b>XWG4</b>	Washer, Insulator (B)	4	
44	<b>XTN3+8B</b>	Screw, P.C.B.	1	
<b>TONE ARM and ARM BASE</b>				
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	SFPSH13201	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	Per Set	Remarks
TA13	SFPGM20001	Rubber, Cueing Lever	1	
TA14	SFPJL13201K	Cueing Lever Ass'y	1	
TA15	SFPZB13204	Plate, Arm Rest	1	
TA16	SFPAB13202	Knob, Arm Lift	1	
TA17	SFPJL13203K	Lift Bar Ass'y	1	
TA17-1	SFPSP13201	Spring, Arm Lift Base	1	
TA17-2	XWE4A10BW	Washer, Arm Lift Base	1	
TA17-3	<b>XUC3FT</b>	Circlip, Arm Lift Base	1	
TA18	SFPRT13201K	Arm Rest	1	
TA19	SFPAB13203	Plate, Lift	1	
TA20	SFPZB13208	Support, Lift	1	
TA20-1	<b>XTN3+5B</b>	Screw, Lift Support	2	
TA21	SFPAB13213K	Base, Arm Lift	1	
TA21-1	<b>XSN3+5S</b>	Screw, Arm Lift Base	2	
TA21-2	SFPSP13202	Spring	1	
TA21-3	<b>XSN3+3S</b>	Screw, Spring	1	
TA21-4	<b>XWA26B</b>	Washer, Arm Rest	1	
TA21-5	<b>XNG26BFN</b>	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	SFPSP00101	Spring, Anti-Skating	1	
TA23-3	<b>XSN3+6S</b>	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	SFWO010	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	XST6D30B	Screw, Clamp	3	
P9	SFYF60A60	Polyethylene Bag, Player Unit	1	
P9-1	SFYH40X45	Polyethylene Bag, Turntable	1	
P9-2	SFYH10X30	Polyethylene Bag, AC Cord	2	

