

Service Manual

 **QUARTZ** Synthesizer

Direct Drive Automatic Turntable System

SL-1400MK2 (M, MC)



- The model SL-1400MK2 (M) is available in America only.
- The model SL-1400MK2 (MC) is available in Canada only.

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

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

Technics
by Panasonic

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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-1400MK2 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-1400MK2 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-1400MK2 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.

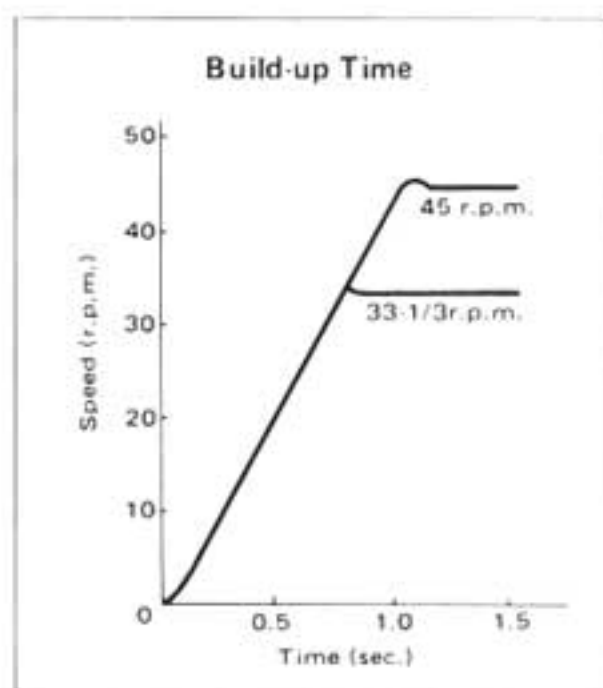


Fig. 1

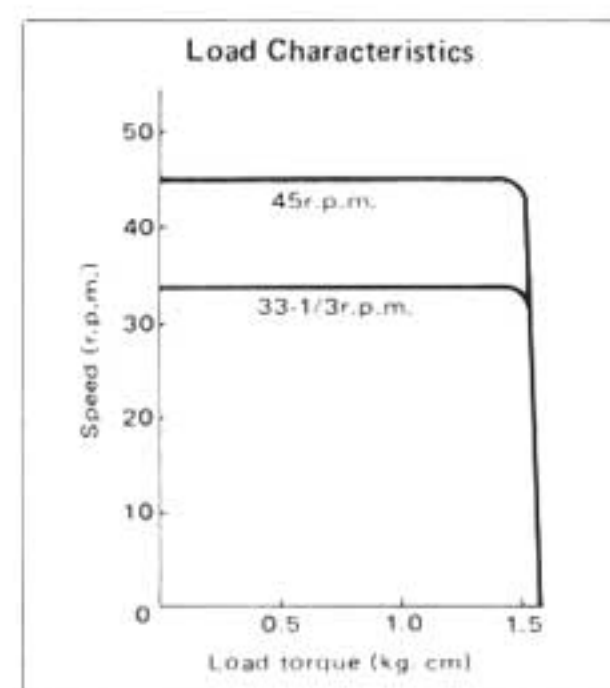


Fig. 2

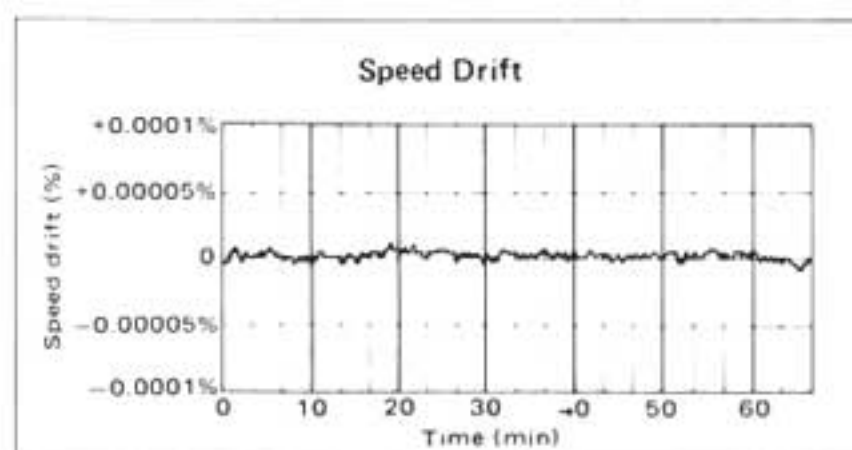


Fig. 3

■ CROSS SECTION OF MOTOR PORTION AND DOUBLE INSULATOR

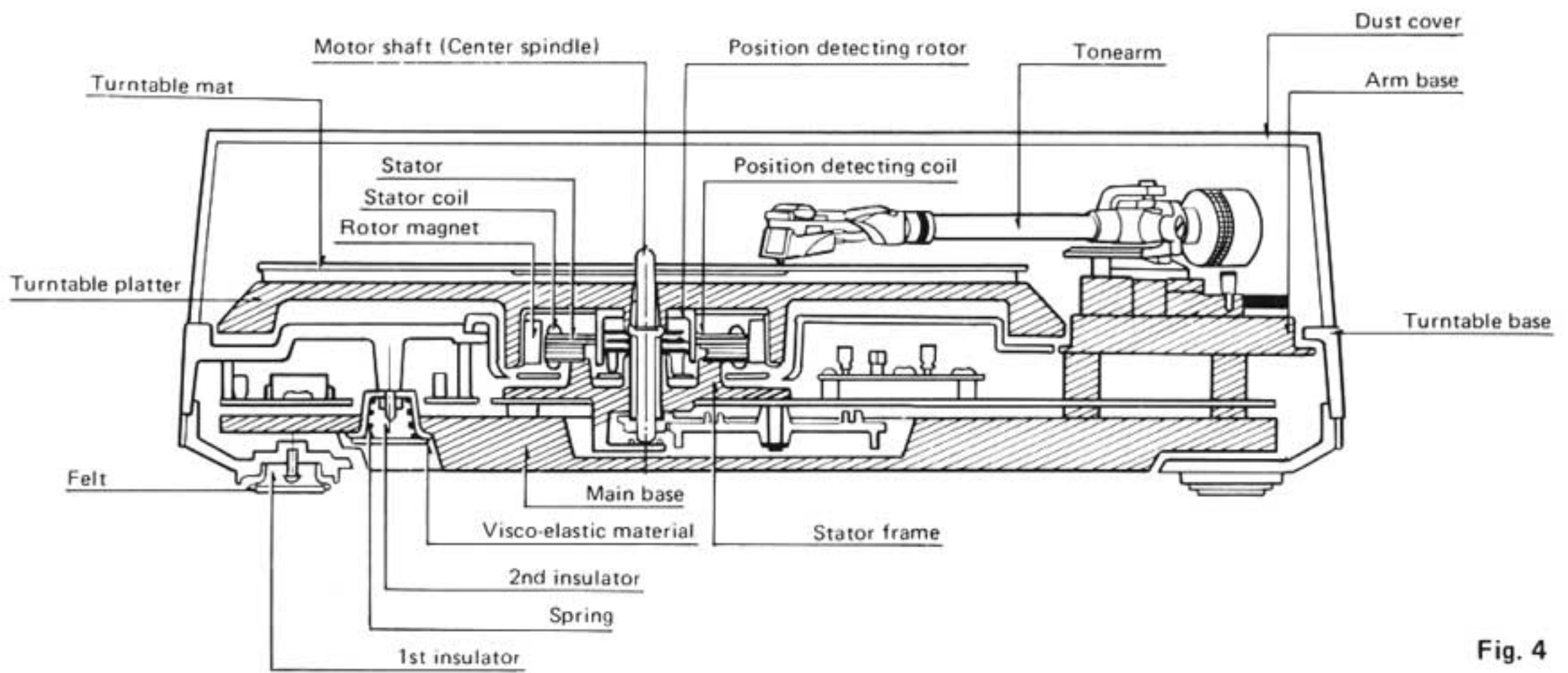


Fig. 4

■ PARTS IDENTIFICATION

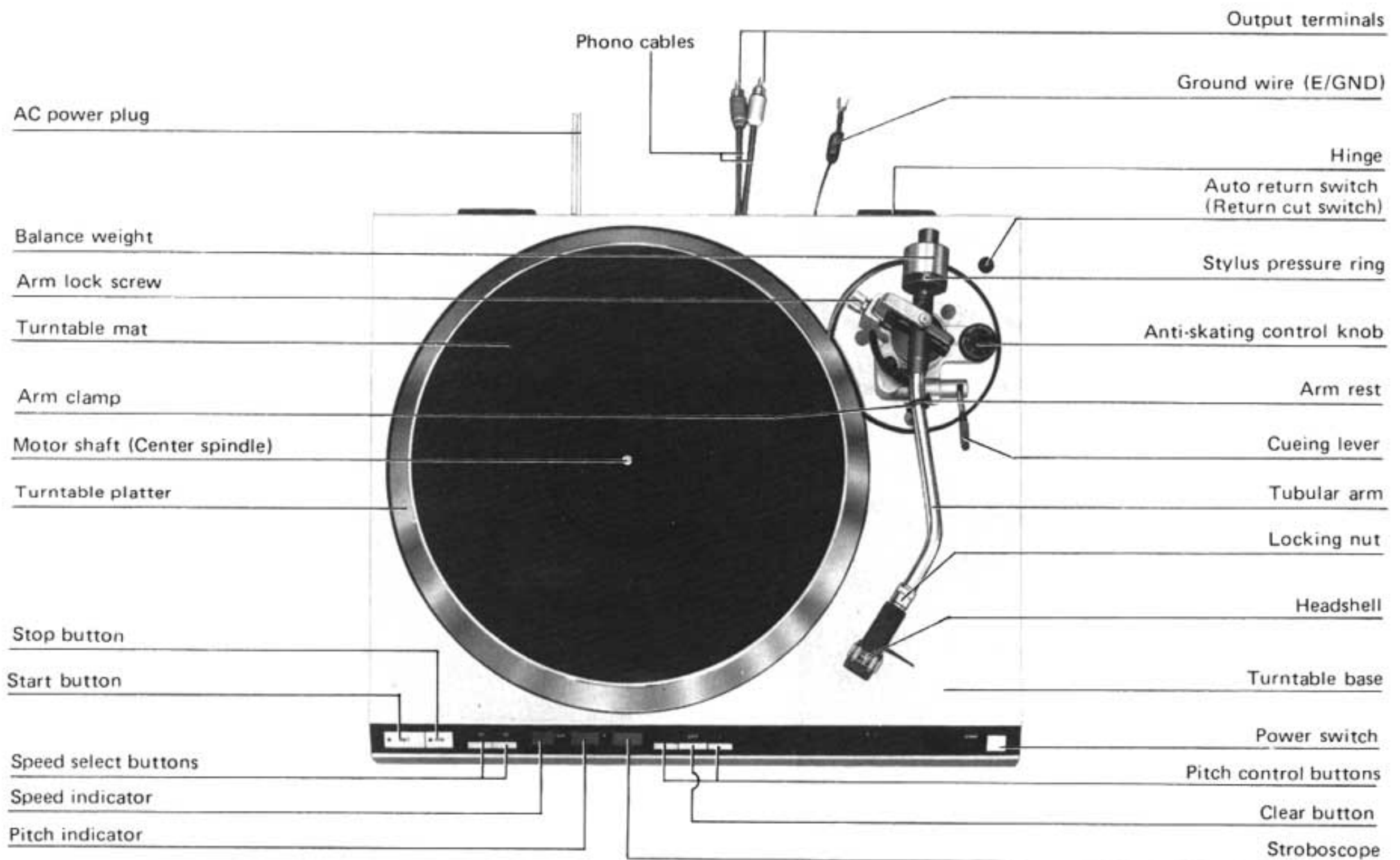


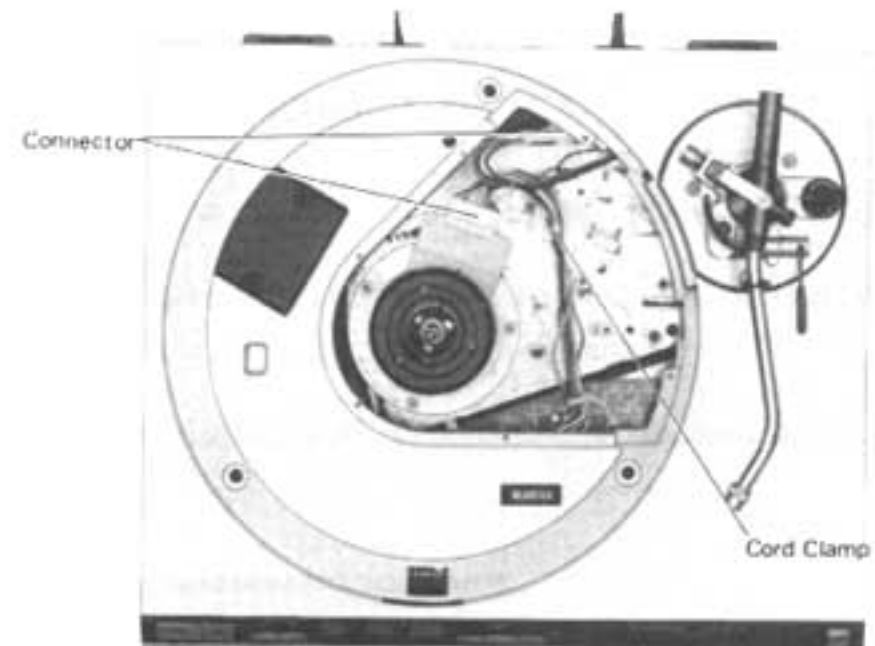
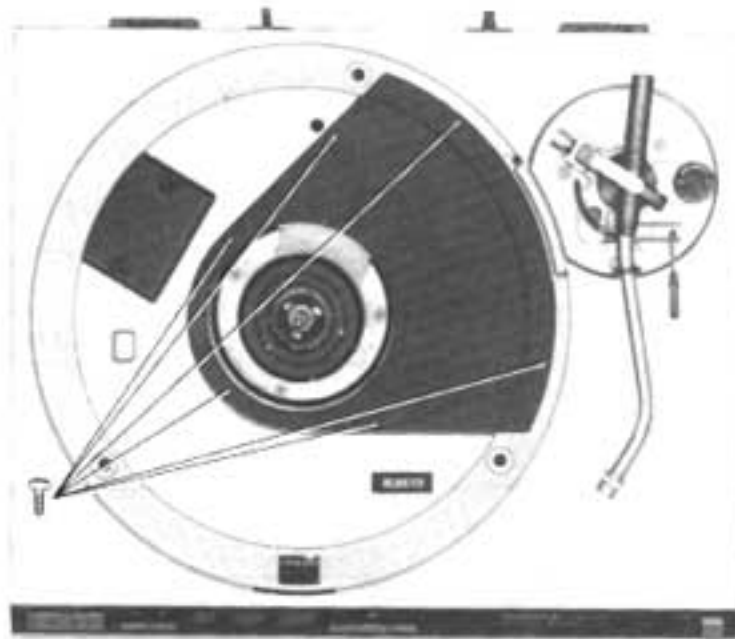
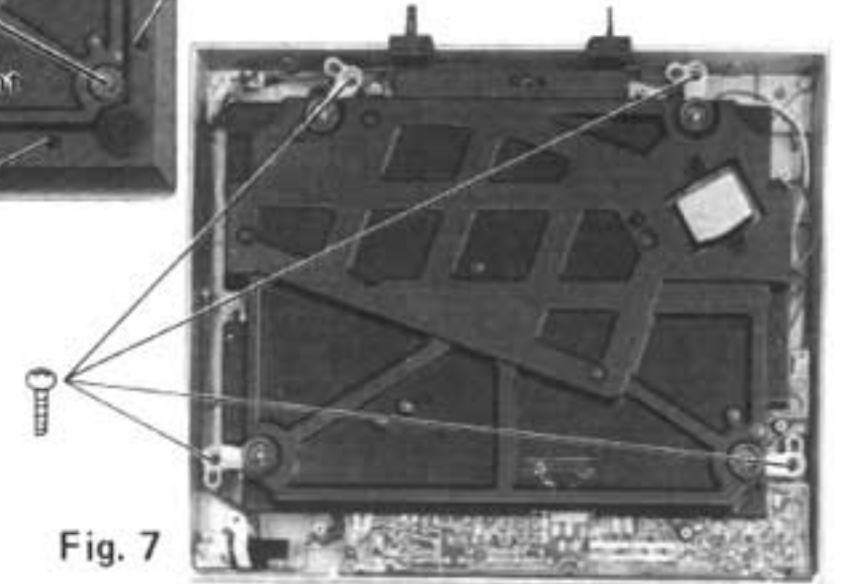
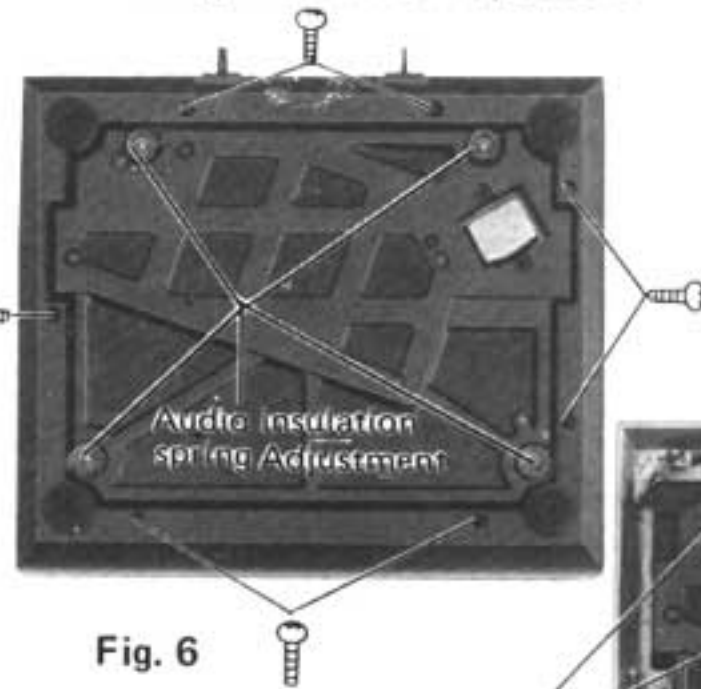
Fig. 5

■ 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 5 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.

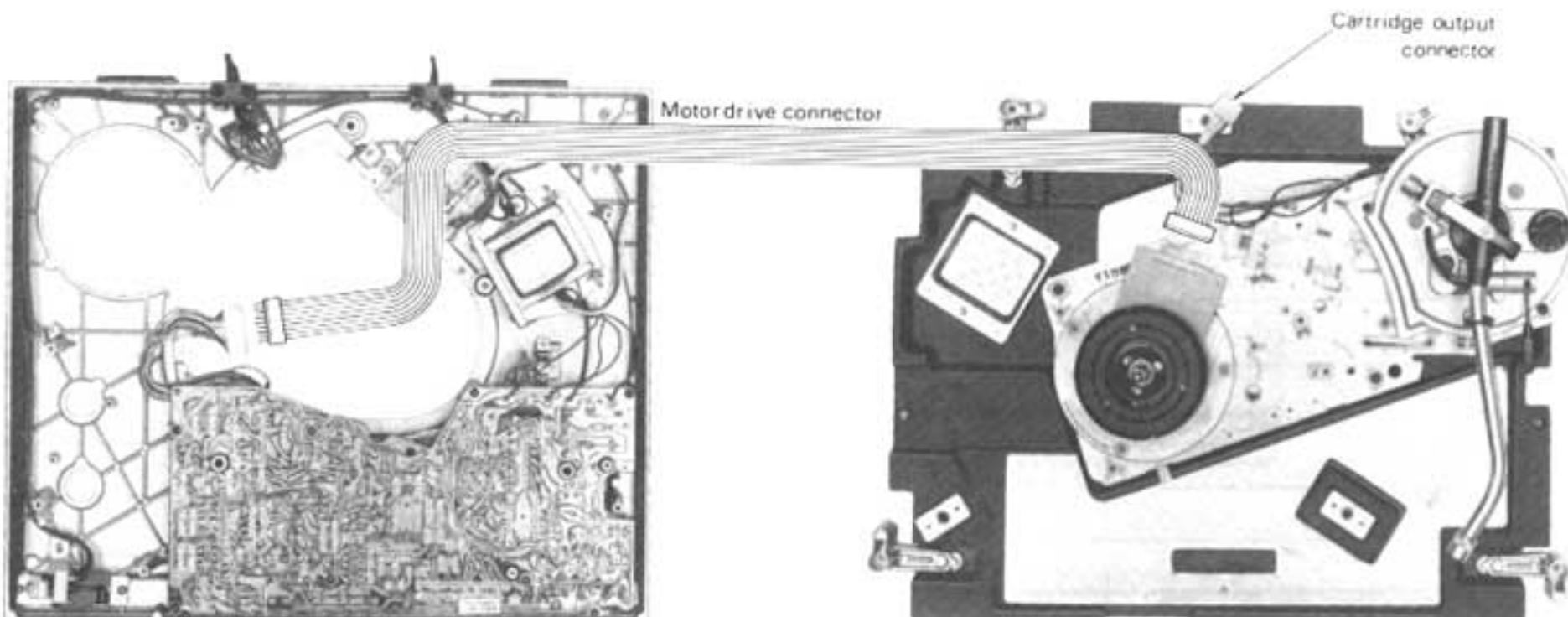
Note:

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.



■ CONNECTOR CONNECTION POINTS FOR INSPECTION

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



■ HOW TO PLAY

Manual play

Push the power switch to the ON position (■).

The speed indicator for 33-1/3 r.p.m. the pitch indicator and stroboscope will all light up.

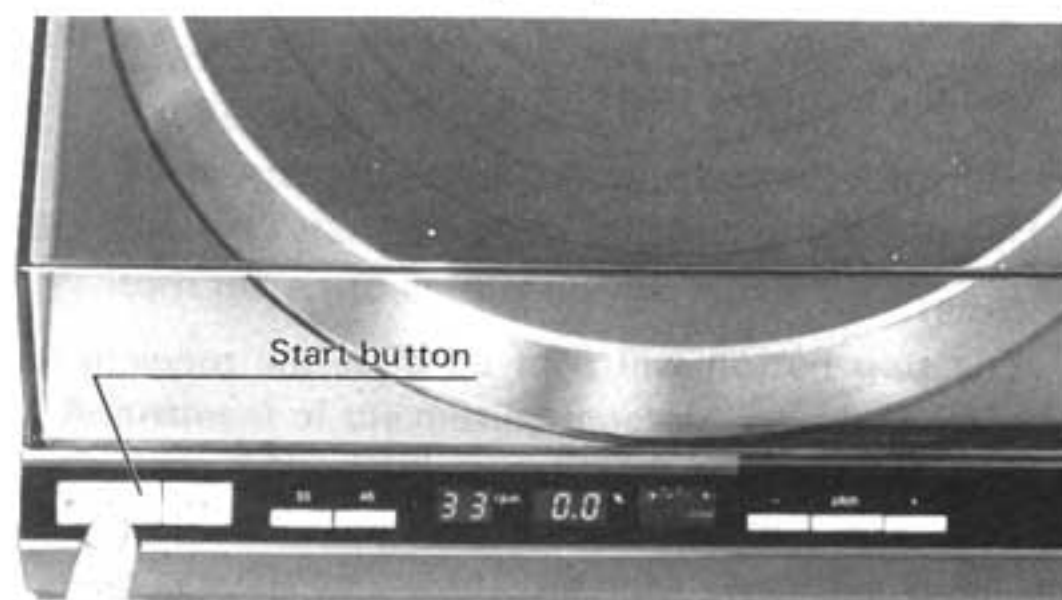


Fig. 11

Place a record on the turntable platter.

Push the 45 r.p.m. speed select button if you play a 45 r.p.m. record. (See Fig.12)

Note:

Since the unit has been designed to select 33-1/3 r.p.m. automatically each time you push the power switch on, push the speed select button if you play a 45 r.p.m. record.

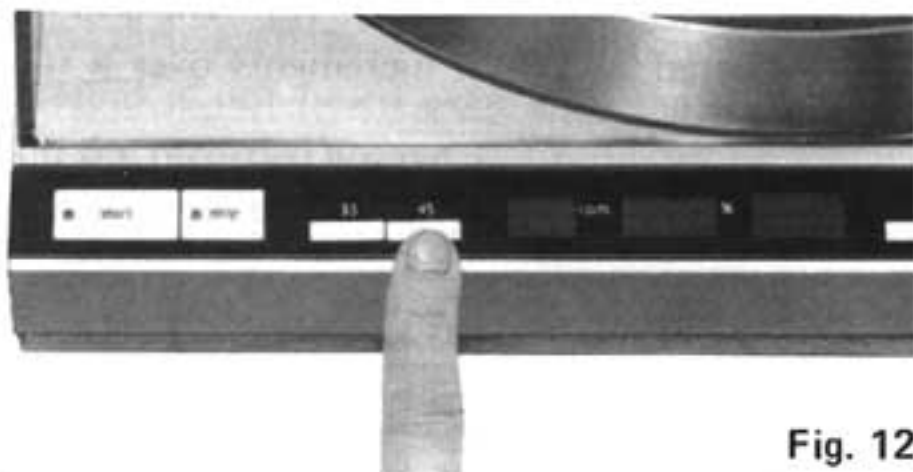


Fig. 12

Move the tonearm manually over the record, the turntable will start to rotate. Lower the cueing lever.

The tonearm will descend slowly onto the record and play will begin.

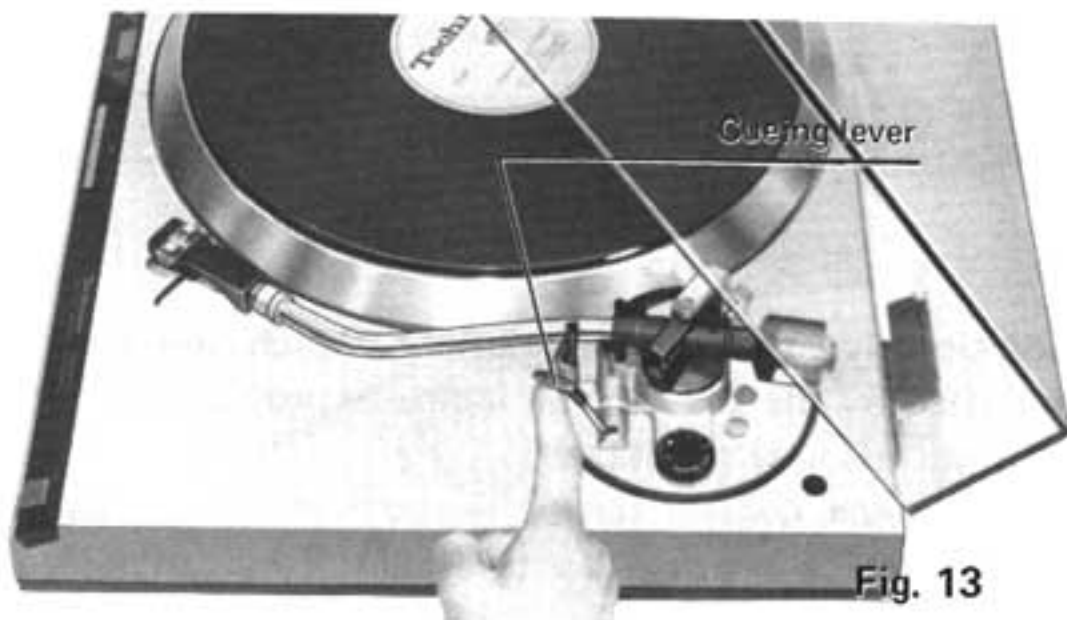


Fig. 13

When finished, the tonearm will automatically return to the arm rest (auto return) and the turntable platter will stop rotation.

Note:

- To shut the power off the power switch must be pushed again to the off (■).

- If the "memo-repeat" knob is in a position other than "0", play will be repeated by the number of time set, therefore, be sure to keep the "memo-repeat" knob in the "0" position.
- If you play a 45 r.p.m. record with a large center hole, use the furnished adaptor on the center spindle.

■ HOW TO USE AUTO RETURN SWITCH

This unit employs a unique "auto return switch" (return cut switch).

- Should any phono disc whose central hole is off center be played, the tonearm will automatically return during the course of performance. In such a case, set the auto return switch to the OFF (■) position (see Fig. 14), and then the phono disc can be played to the final groove.



Fig. 14

Note:

For restoring the normal auto return function, set the switch back to the ON (■) position.

■ ADJUSTMENTS-1

Adjustment of the arm height. (See Fig. 15, 16)

- This tonearm has been locked in the "UP" position before shipping from the factory. adjust the arm height according to your cartridge height.
- Loosen the arm lock screw and move the arm lock screw and gimbal support portion until the tonearm is parallel with the record surface.

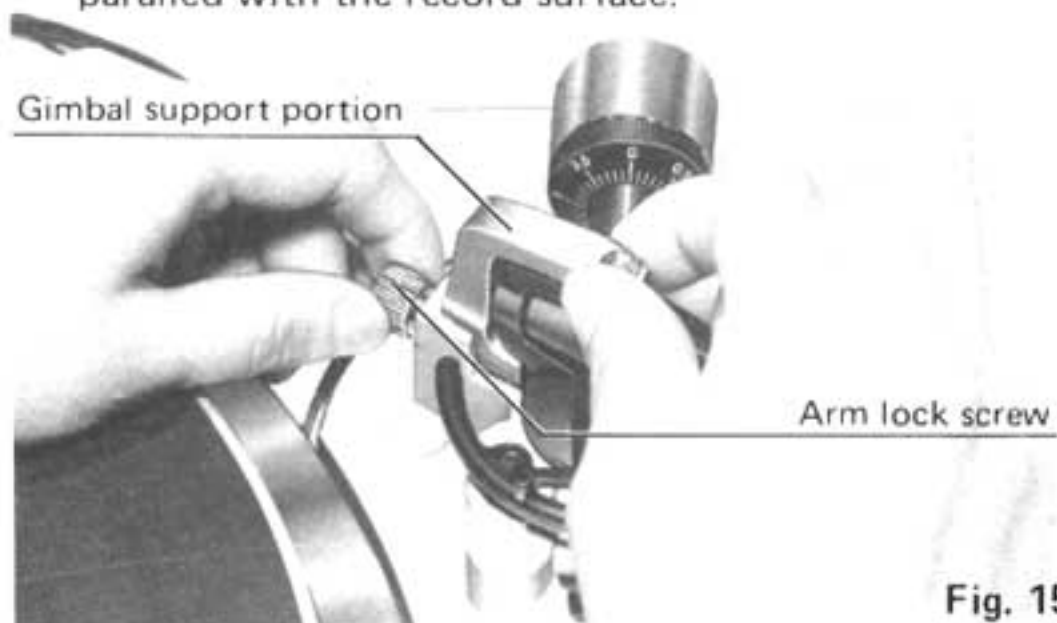


Fig. 15

■ ADJUSTMENTS-2

Pitch control (turntable speed fine adjustment)

By the employment of the Quartz Synthesizer pitch control for being employed for the first time in the world, a high degree of pitch control accuracy over a range as wide as $\pm 9.9\%$ in 0.1% increments can be obtained independently, with the quartz locked speed accuracy.

■ HOW TO SUSPEND AND STOP PLAY

- For temporary suspension of play, raise the cueing lever, and the stylus tip of the cartridge, will lift from the record.
- For suspension of play, push the stop button. The tonearm automatically returns to the arm rest and the turntable stops rotating.

Note:

The stop button will light up after the tonearm returns to the arm rest.

- If the cartridge height is 18 mm as shown in the picture, lock the arm bearing support at the line indicated in the picture. (See Fig. 16) The arm height can be adjusted in 1 mm increments over a range of 6 mm.

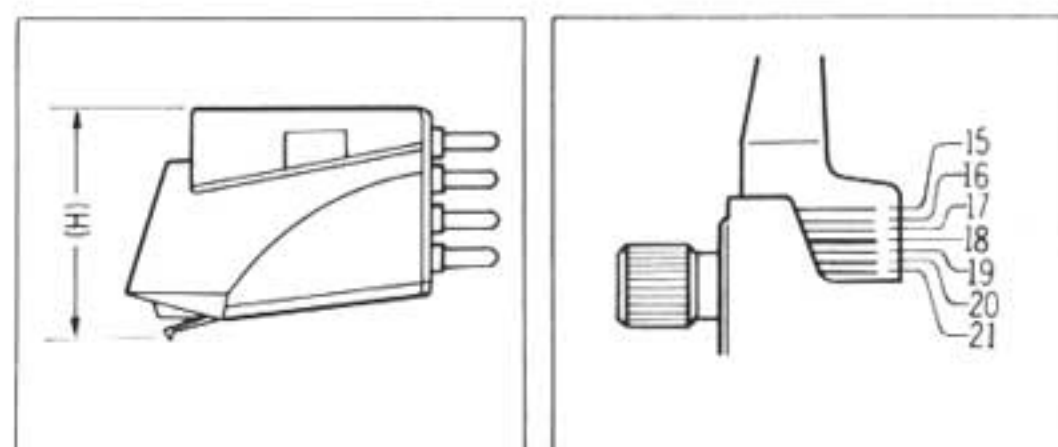


Fig. 16

Additionally, 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 or reduction of broadcasting time in professional applications.

- The pitch control also enables you to accurately and precisely tune with musical instruments, and by varying the pitch slightly to obtaining a different musical note from phono disc.

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 choral 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 lift height.

(See Fig. 17 and 18)

This unit employs a "muting switch" in combination with arm lift to cut off the 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 cartridges 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.

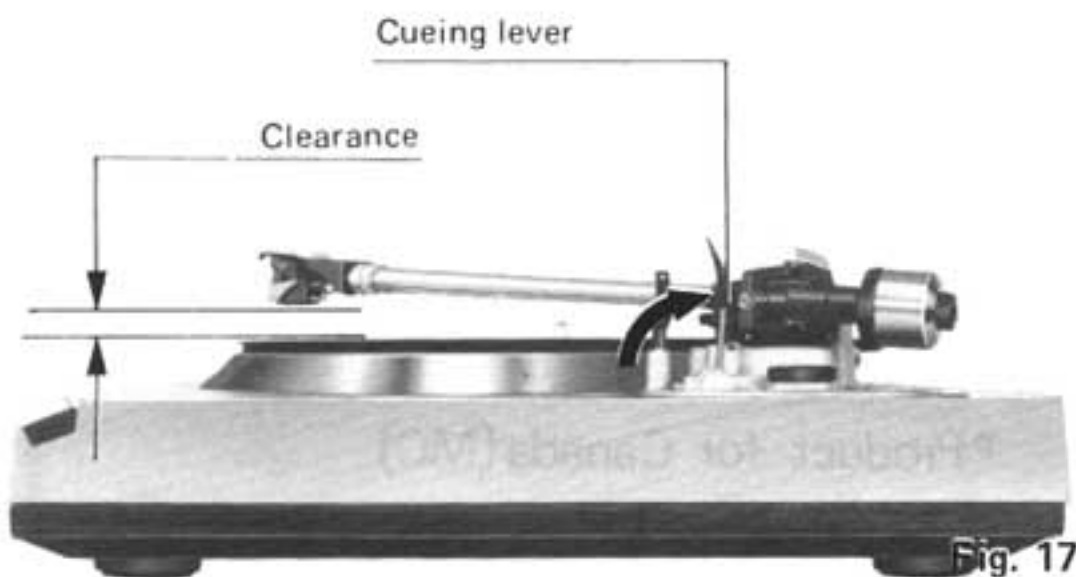


Fig. 17

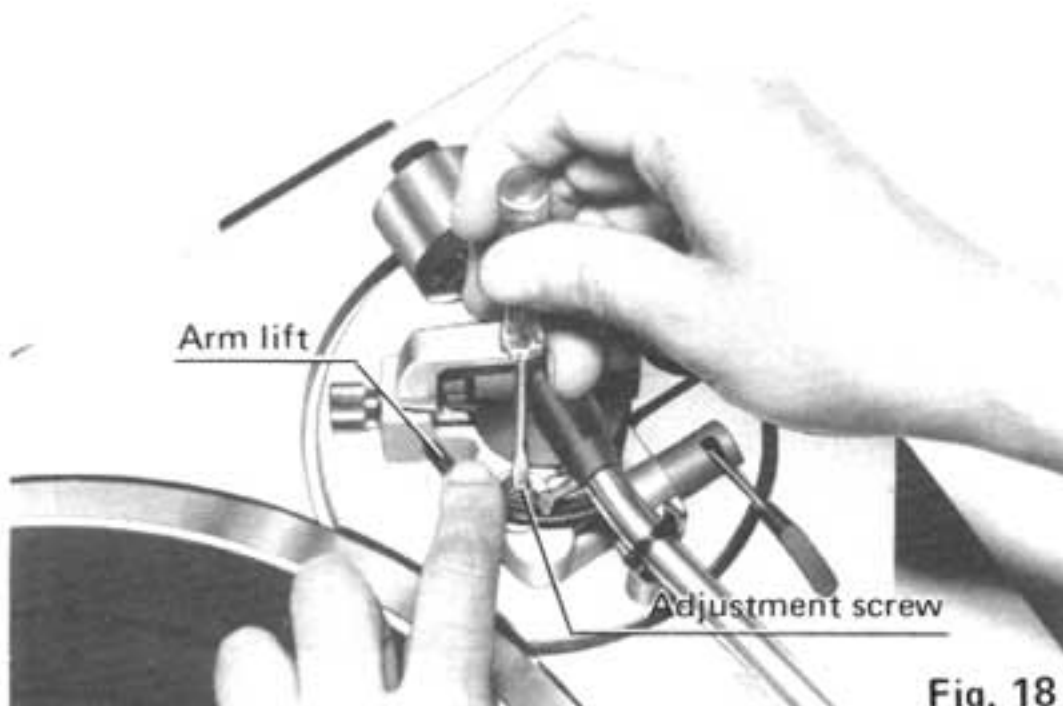


Fig. 18

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.

Adjustment for automatic return position (See Fig. 19).

- 1) Keep the power switch turned OFF (■) to prevent the turntable from rotation.
- 2) Remove the rubber cap.
- 3) Move the tonearm toward the center spindle side, and make the adjustment by gradually turning the adjusting screw.

In cases where the tonearm tends to return before the playing has finished.

- Move counterclockwise.

In cases where the tonearm fails to return after the last groove of the record.

- Move clockwise.

Note:

Never turn the screw over a 180-degree angle.

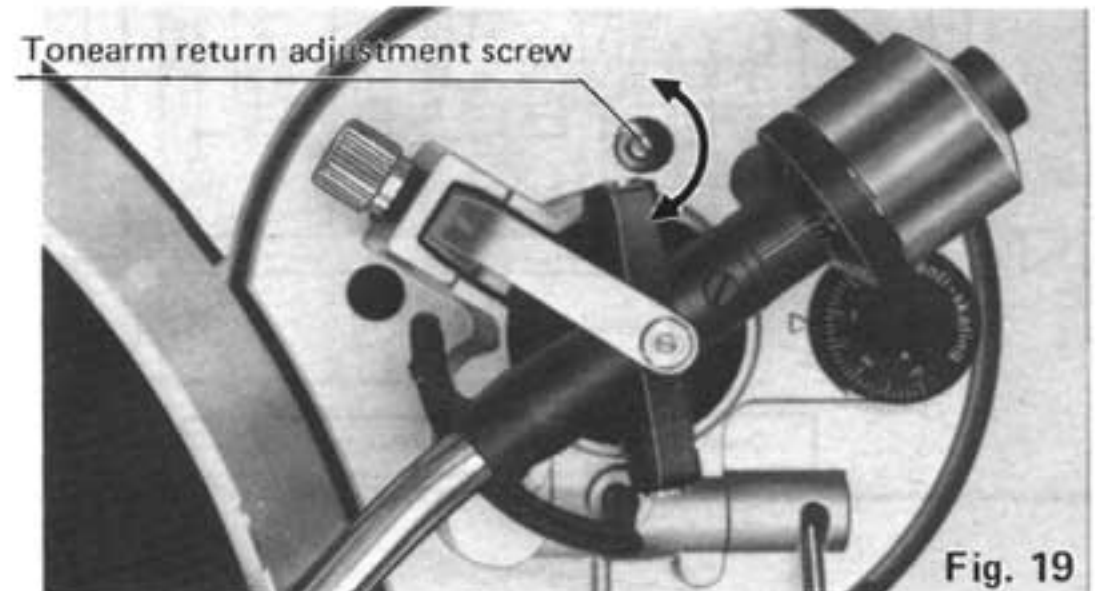
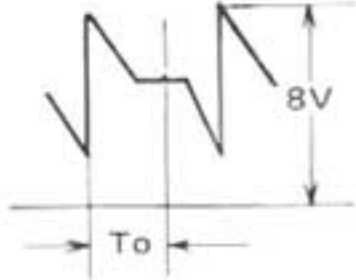
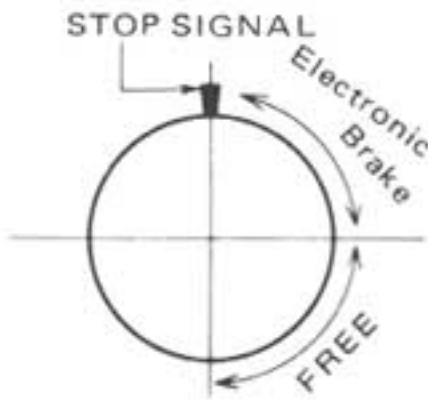
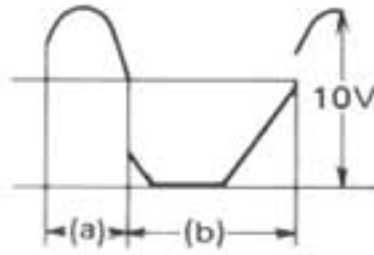
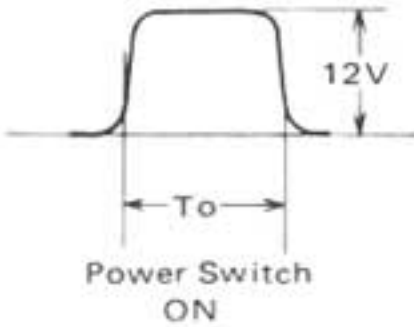


Fig. 19

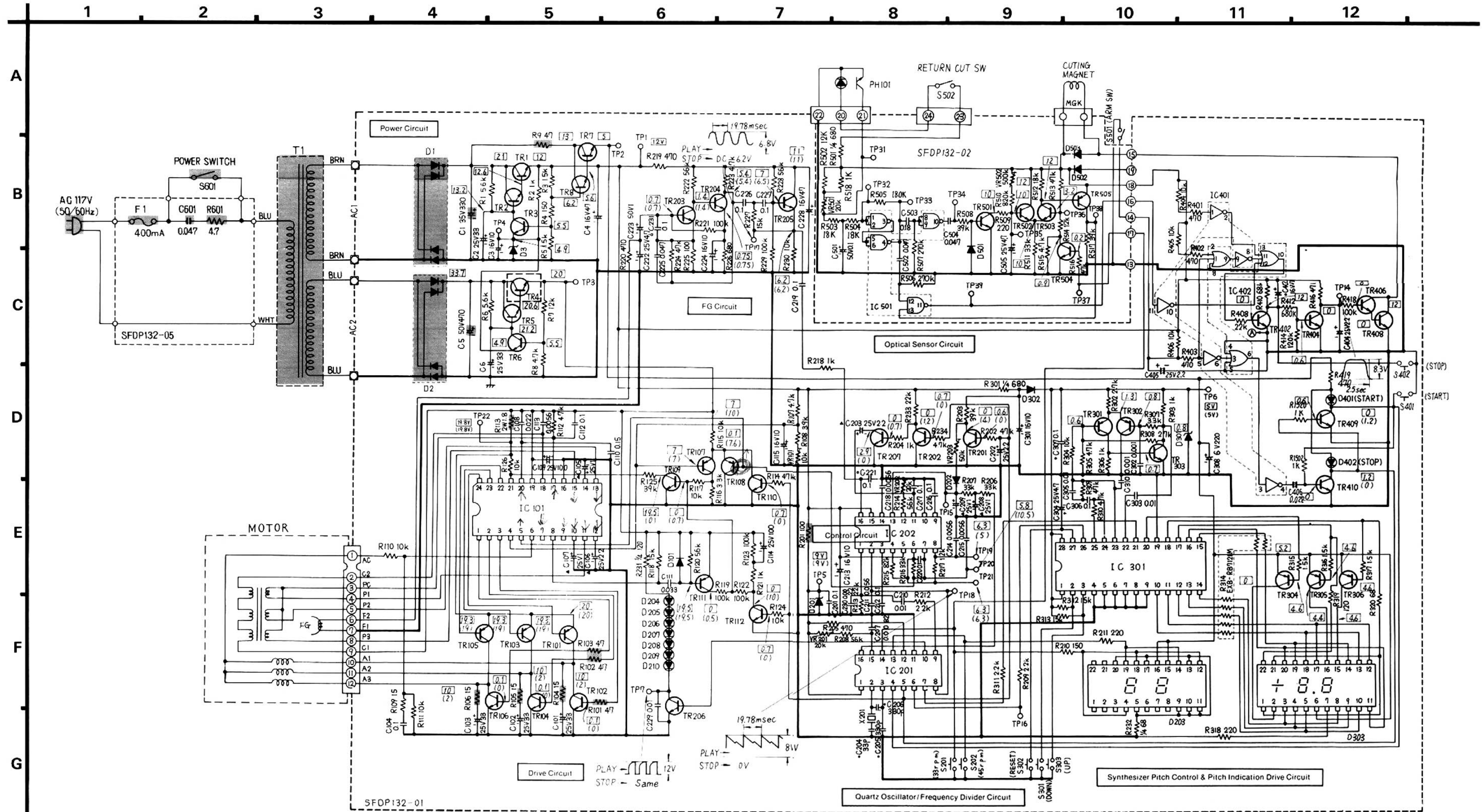
■ ADJUSTMENTS-3

Adjustment Points of Electrical System

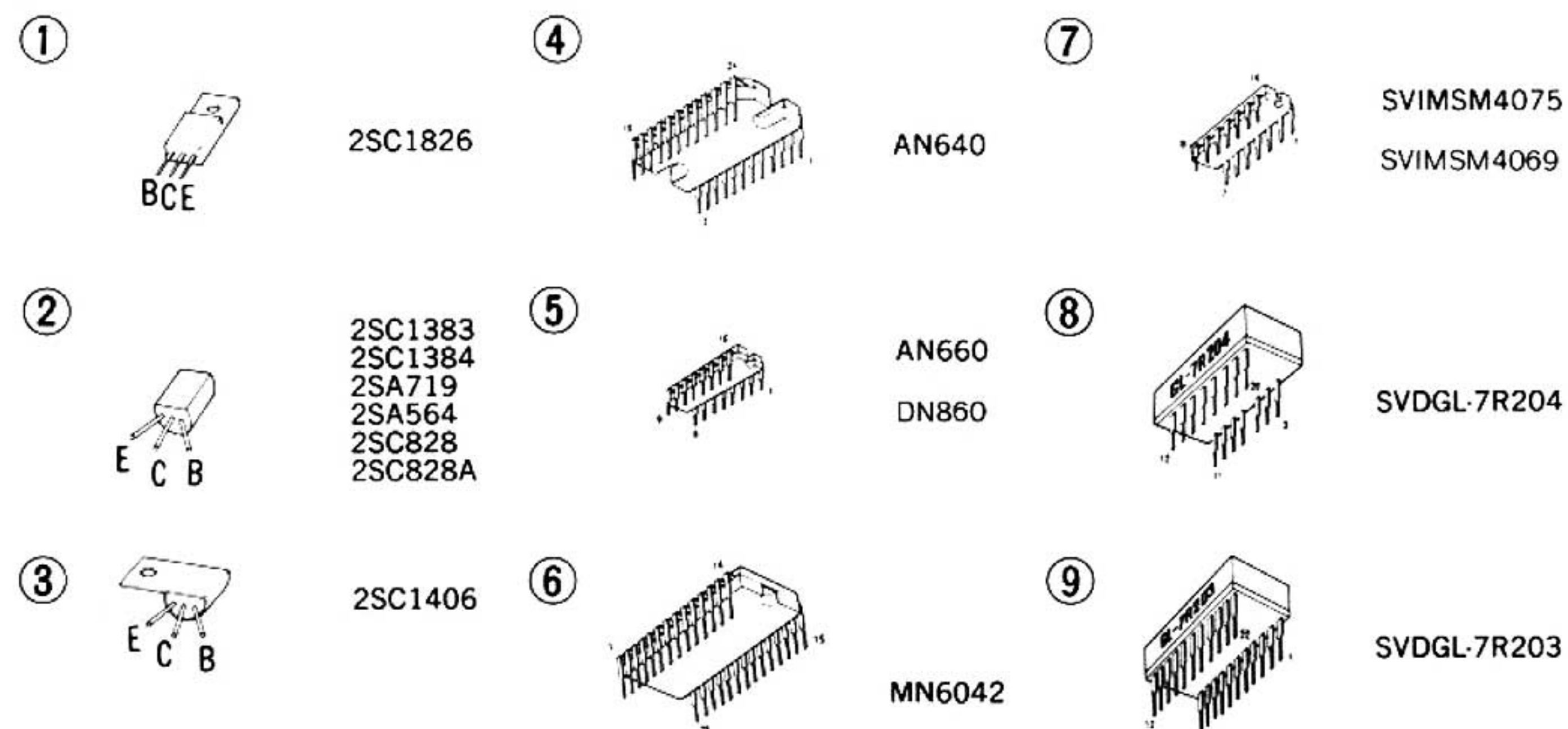
NOTE: Make the following adjustments after replacing parts such as IC's, transistors, diodes, etc.

	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 $8 \leq T_0 \leq 8.5$ 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 $90^\circ \sim 180^\circ$ after stop signal initiated. (Turntable becomes free a few seconds after stop.)
E	Optical sensor gain adjustment	Oscilloscope ⊕ → TP32 ⊖ → GROUND	VR501	TP32 waveform  With arm near center spindle, manually move with uniform motion, and adjust VR501 as that the (a) and (b) pitch of the waveform of TP32 is equal.
F	Auto-Return time adjustment	Oscilloscope ⊕ → TP38 ⊖ → GROUND	VR502	TP38 waveform  Turn power switch on, and adjust VR502 so that the time (T_0) from power on until the voltage of TP38 inverts is 1.5 second at 33 rpm. (1.1 second at 45 rpm) TP37: for 33 rpm . . . 0V for 45 rpm . . . 2V

Schematic Diagram Model SL-1400MK2



■ TERMINAL GUIDE



IMPORTANT SAFETY NOTICE

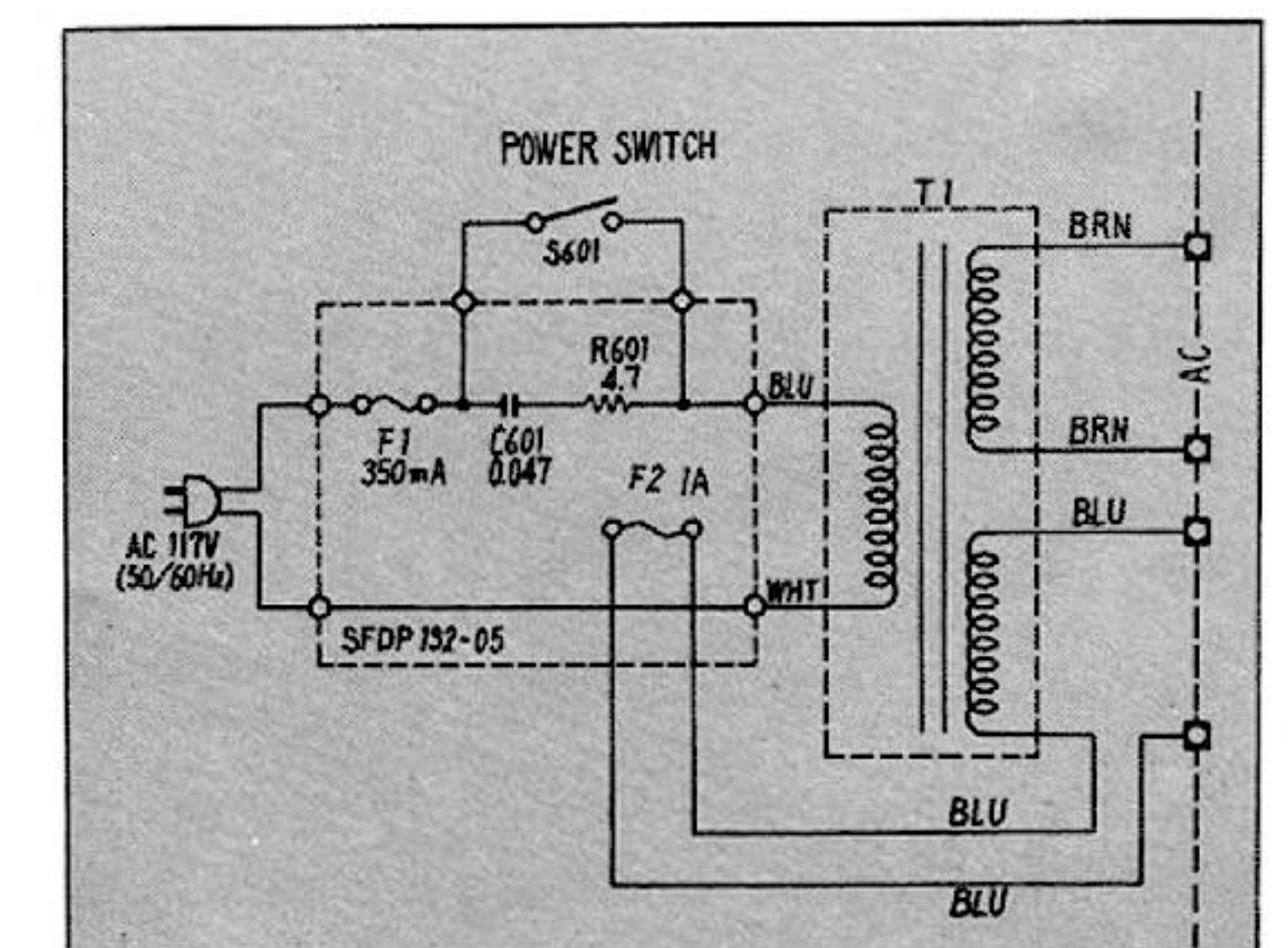
THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR SAFETY. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.

Notes:

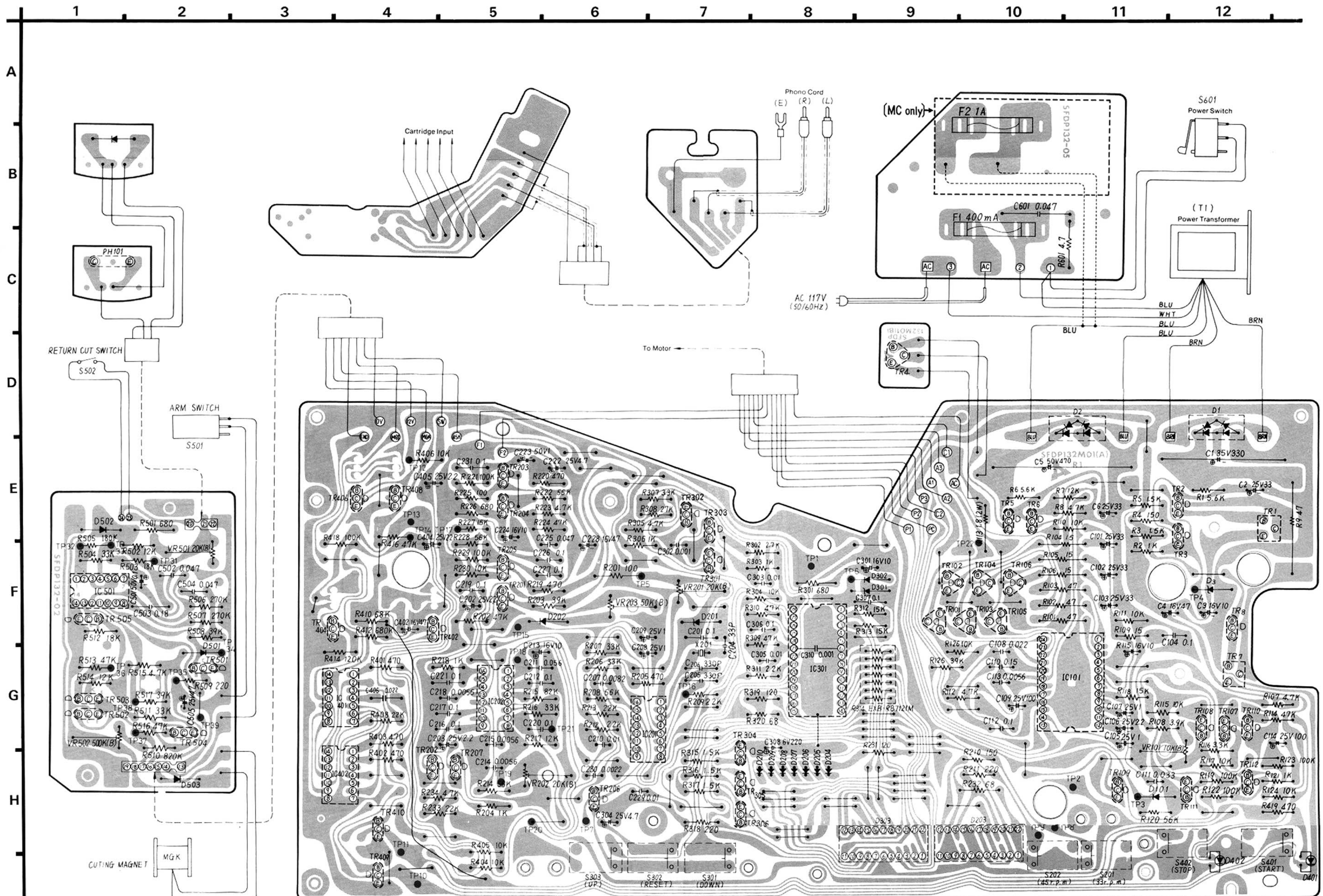
- S201: Speed select switch (33 r.p.m.)
- S202: Speed select switch (45 r.p.m.)
- S301: Pitch Control switch (Down)
- S302: Pitch Control switch (Reset)
- S303: Pitch Control switch (Up)
- S401: Start switch in "off" position.
- S402: Stop switch in "off" position.
- S501: Arm switch in "off" position.
- S502: Return cut 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.

- TR2, 3, 6, 8, 406
- TR5
- TR102, 104, 106
- TR101, 103, 105
- TR107, 107, 111
- 301, 302, 505
- TR109, 110, 112, 201 ~ 207, 303, 402 ~ 404, 409, 410, 501 ~ 504
- TR304 ~ 306
- TR408, 40
- IC101
- IC201
- IC202
- IC301
- IC401
- IC402
- IC501
- D1, 2
- D3, 301
- D101, 202, 302, 501 ~ 503
- D201
- D203
- D203 ~ 210
- D303
- D401, 402
- 2SC1826
- 2SC1328-T
- 2SC1384
- 2SC1406
- 2SA752
- 2SA666A1-R
- 2SC1328-T
- 2SA719
- 2SC1384
- AN640
- DN860
- AN660
- MN6042
- SVIMSM4069
- SVIMSM4075
- SVIMSM4011
- IC402
- IC501
- SVDS1RBA20
- SVDRD5.1EBS
- MA150
- SVDRD9.1EBS
- SVDGL-7R204
- SVDSR105C
- SVDGL-7R203
- SVDSR105C

• Product for Canada (MC)

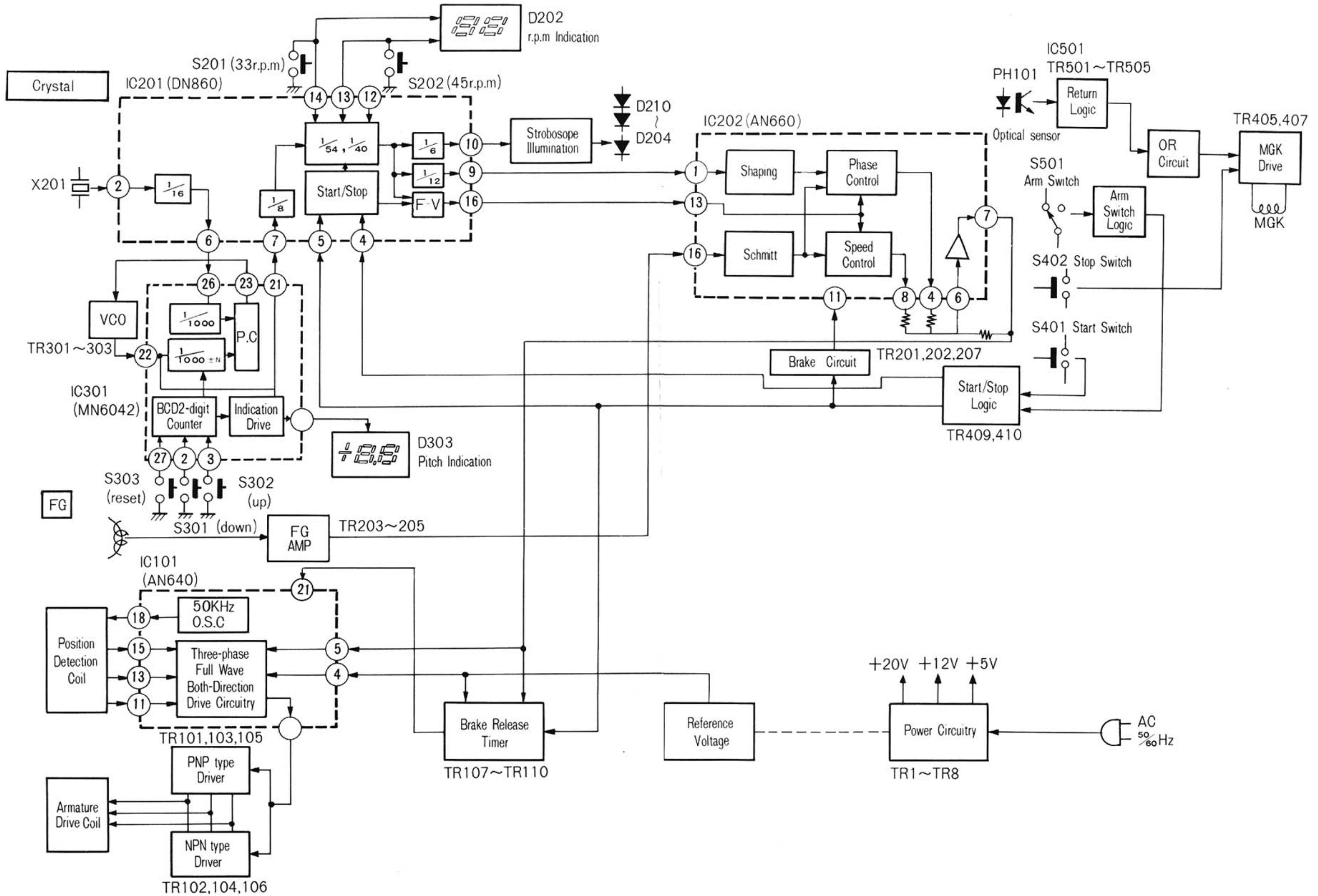


Printed Circuit Board SL-1400MK2

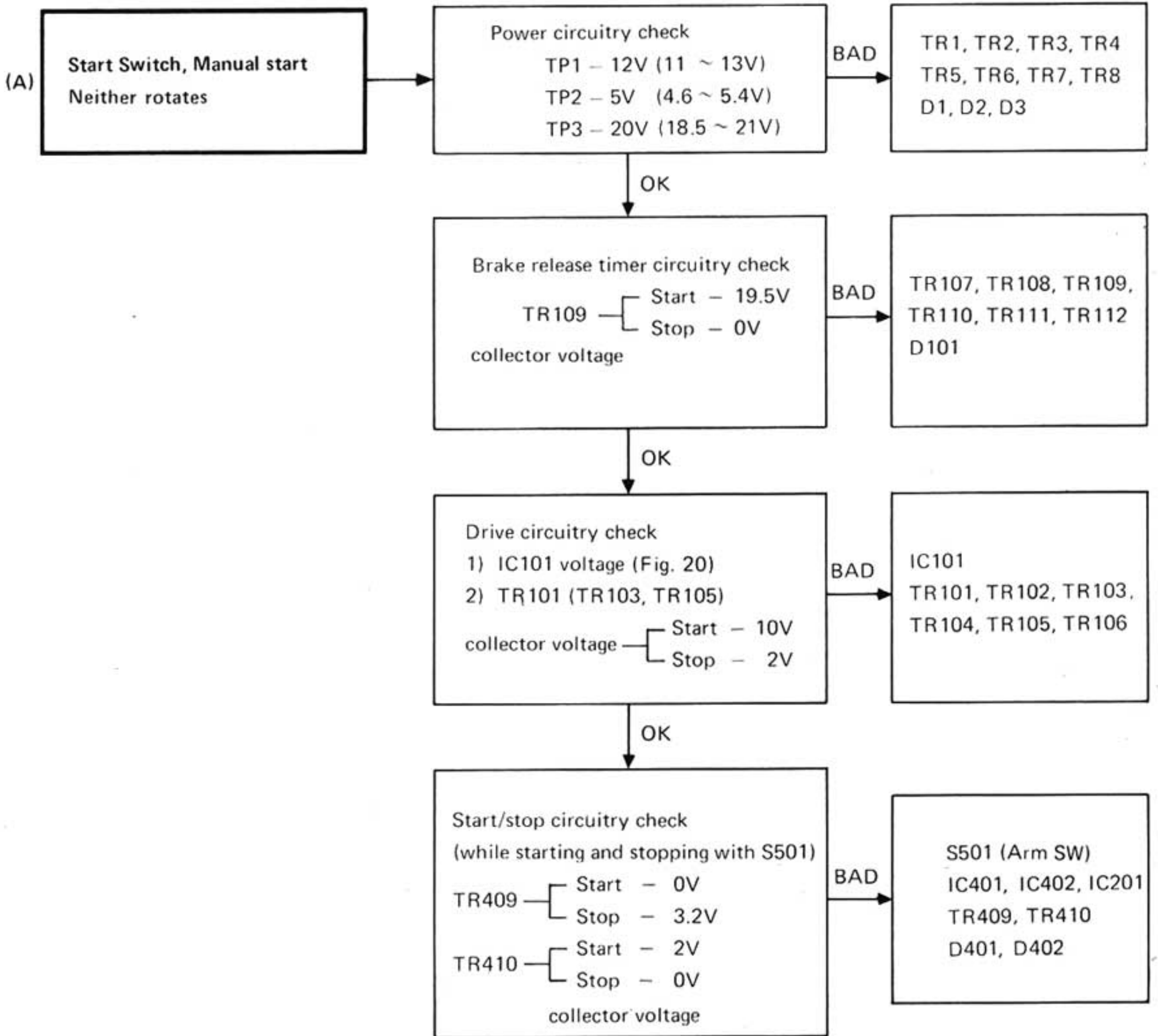


R1 2SC826 [E] 12 V [C] 21 V [B] 12.4 V	TR2 2SC828A [E] 12.6 V [C] 21 V [B] 13.2 V	TR3 2SC828A [E] 4.9 V [C] 13.2 V [B] 5.5 V	TR4 2SC826 [E] 20 V [C] 33.7 V [B] 20.6 V	TR5 2SC1383 [E] 20.8 V [C] 33.7 V [B] 21.2 V	TR6 2SC828A [E] 4.9 V [C] 21.2 V [B] 5.5 V	TR7 2SC1826 [E] 5.2 V [C] 13.2 V [B] 5.6 V	TR8 2SC828A [E] 9.6 V [C] 13.2 V [B] 6.2 V	TR101 2SA751 [E] 20 V [C] 13.2 V [B] 19.3 V	TR102 2SC1406 [E] 0 V [C] 10 V [B] 0.1 V	TR103 2SA751 [E] 20 V [C] 13.2 V [B] 19.3 V	TR104 2SC1406 [E] 0 V [C] 10 V [B] 0.1 V	TR105 2SA751 [E] 20 V [C] 13.2 V [B] 19.3 V	TR106 2SC1406 [E] 0 V [C] 10 V [B] 0.1 V	TR107 2SA564 [E] 0.1 V [C] 0 V [B] 7 V	TR108 2SA564 [E] 0.1 V [C] 0 V [B] 7 V	TR109 2SC828 [E] 0 V [C] 19.5 V [B] 0 V	TR110 2SC828 [E] 20 V [C] 0 V [B] 0.7 V	TR111 2SA564 [E] 0 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 V [C] 0 V [B] 1.4 V	TR205 2SA564 [E] 0 V [C] 0 V [B] 12 V	TR206 2SC828 [E] 0 V [C] 0 V [B] 0.6 V	TR207 2SC828 [E] 0 V [C] 0 V [B] 0.6 V	TR301 2SA564 [E] 1.3 V [C] 0 V [B] 0.6 V	TR302 2SA564 [E] 3 V [C] 0 V [B] 0.8 V	TR303 2SC828 [E] 0 V [C] 0 V [B] 0.7 V	TR304 2SA719 [E] 5.2 V [C] 4.4 V [B] 4.6 V	TR305 2SA719 [E] 5.2 V [C] 4.4 V [B] 4.6 V	TR306 2SA719 [E] 5.2 V [C] 4.4 V [B] 4.6 V	TR402 2SC828 [E] 0 V [C] 0 V [B] 0.6 V	TR406 2SC828A [E] 0 V [C] 12 V [B] 0 V	TR408 2SC1384 [E] 0 V [C] 12 V [B] 0 V	TR409 2SC828 [E] 0 V [C] 2 V [B] 0 V	TR410 2SC828 [E] 0 V [C] 2 V [B] 0 V	TR501 2SC828 [E] 0 V [C] 10 V [B] 0 V	TR502 2SC828 [E] 10 V [C] 12 V [B] 10 V	TR503 2SC828 [E] 10 V [C] 12 V [B] 3.2 V	TR504 2SC828 [E] 0 V [C] 0 V [B] 0.2 V	TR505 2SA564 [E] 0 V [C] 0 V [B] 1.2 V
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■ BLOCK DIAGRAM



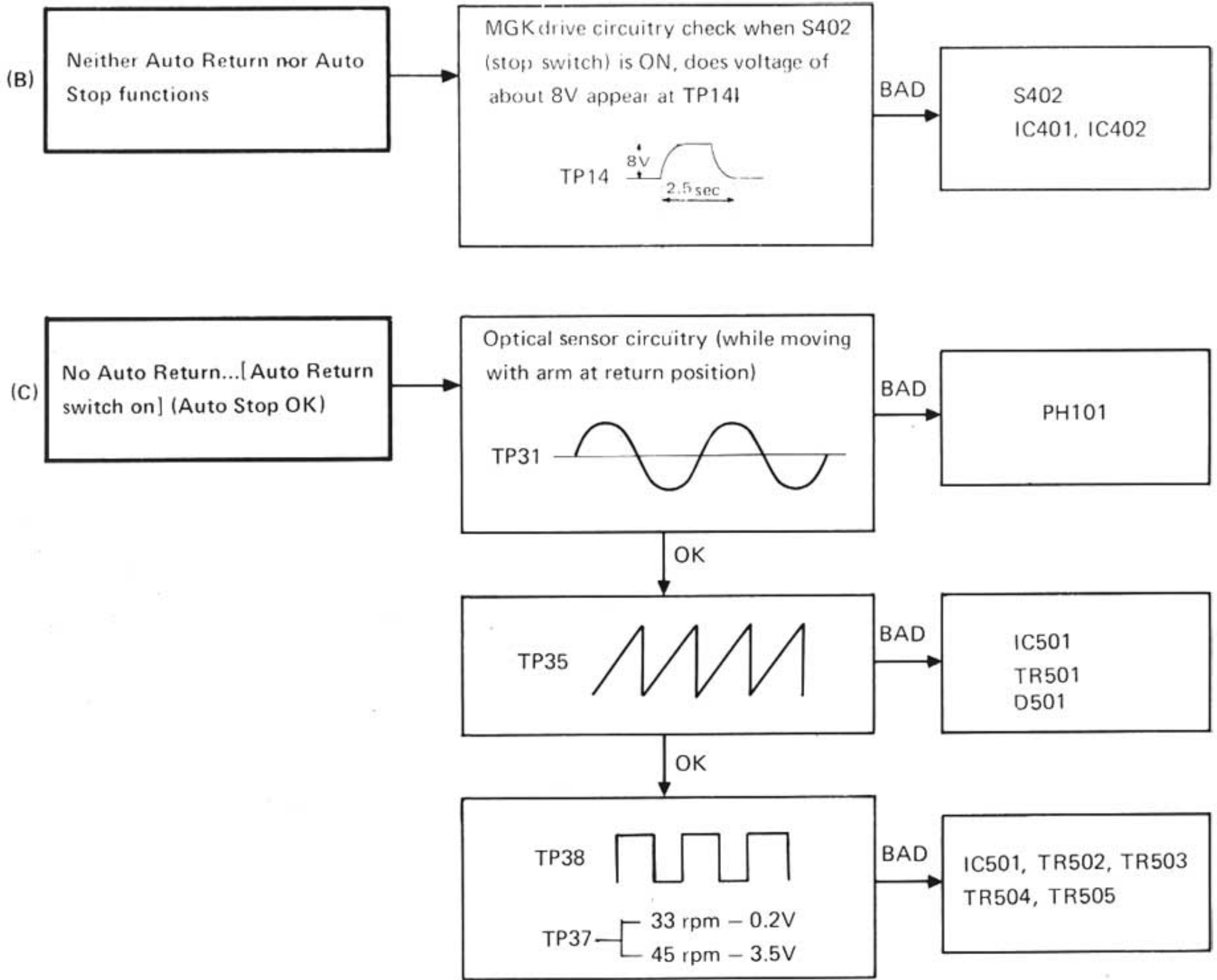
■ TROUBLE SHOOTING

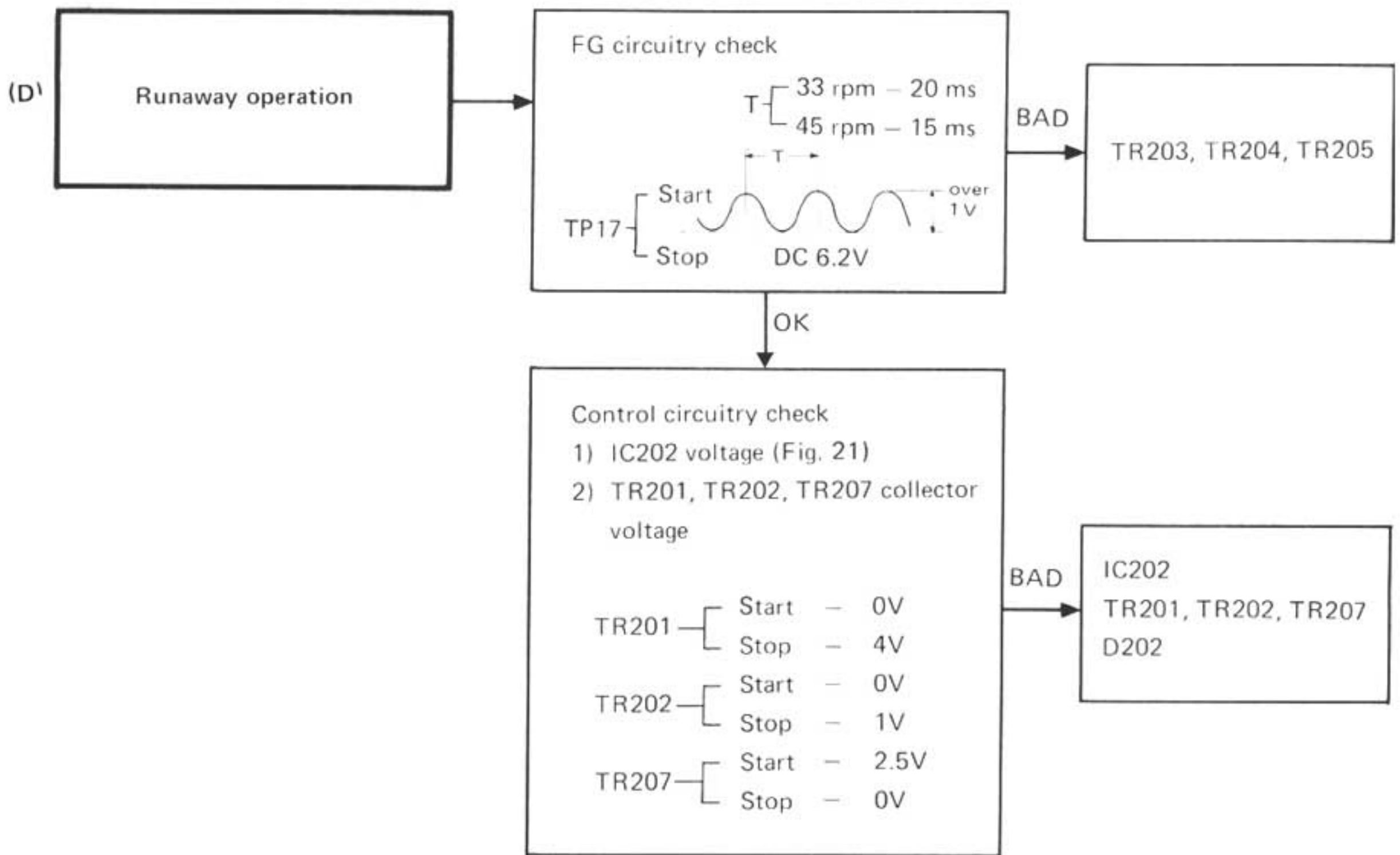


Reference voltage of each pin of IC101

(Fig. 20)

	Start	Stop		Start	Stop		Start	Stop
1		0.1V	10	14.5V	15.2V	17	15.5V	15.5V
2				11	Same as at left	18		Same as at left
3				13				
4	5.8V	6.1V	12	14.9V	15V	19	20.6V	20.6V
5	5.9V	10.5V	14	14.9V	15V	20	15.3V	1.4V
6	4.7V	2.2V	16	0V	0V	21	20.5V	16.4V
7	4.9V	4.9V				22	20V	20V
8	20.5V	20.5V				23		
9		0.2V				24		

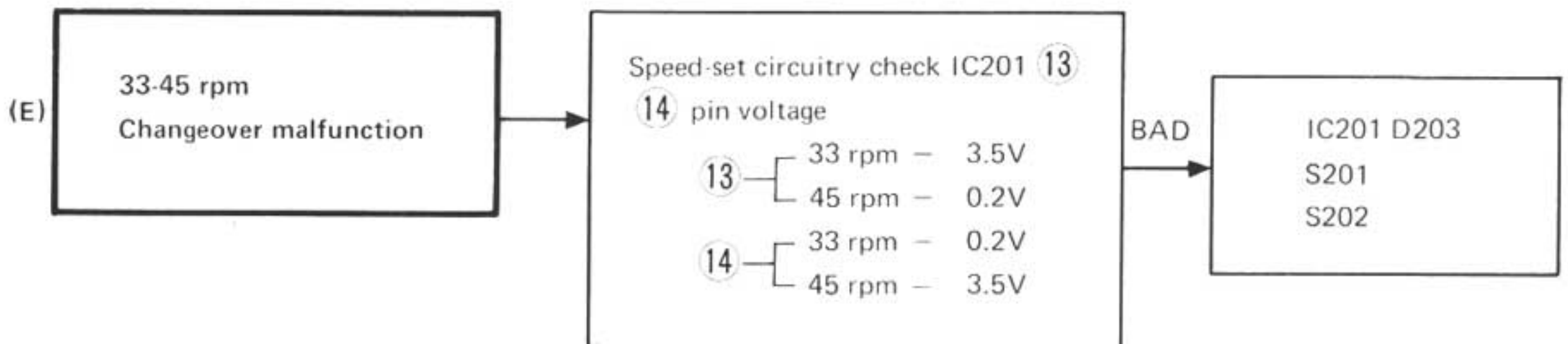


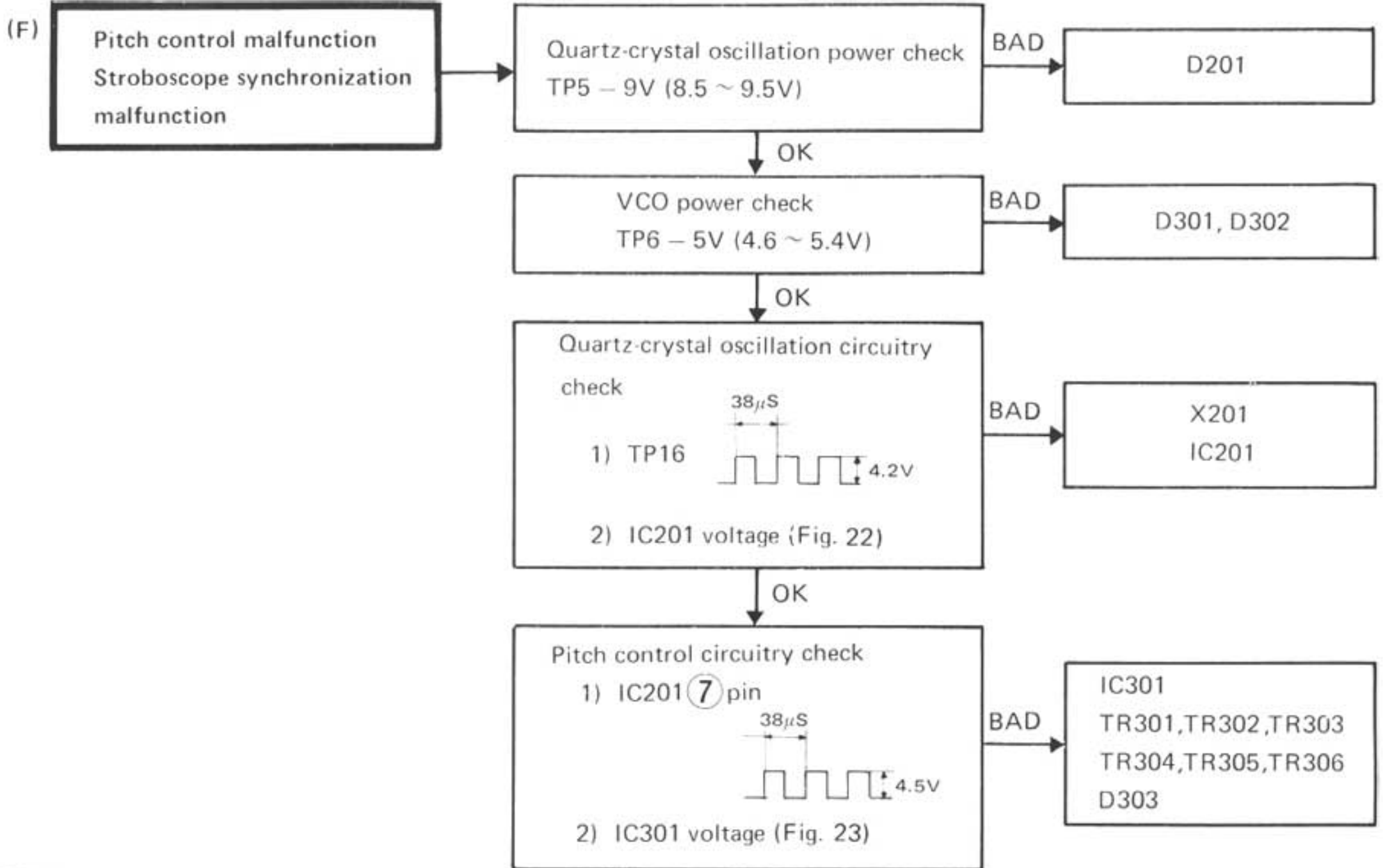


Reference voltage of each pin of IC202

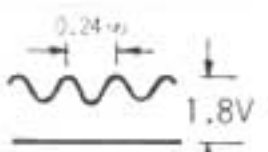
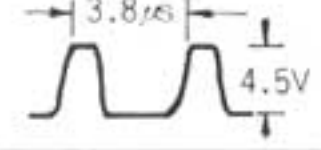
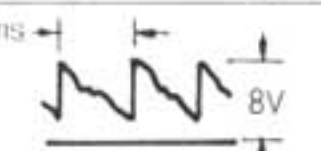

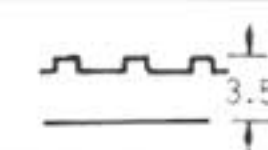
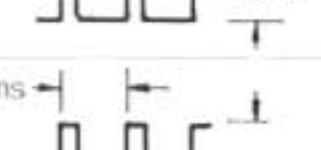

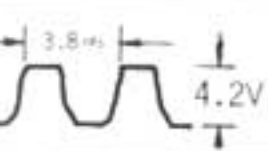

(Fig. 21)

	Start	Stop		Start	Stop		Start	Stop
1		0V	6	6.3V	6.3V	12	2.1V	2.7V
2	Same at TP18	0V	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	0V	0V	16		5.5V
			11		7.5V			

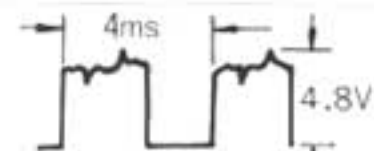
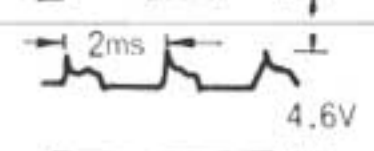
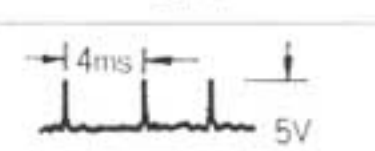
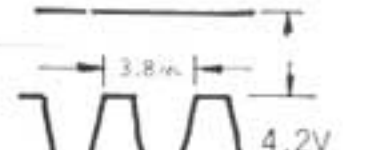
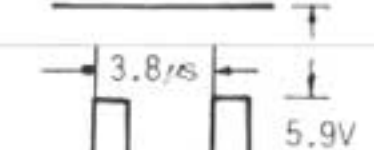
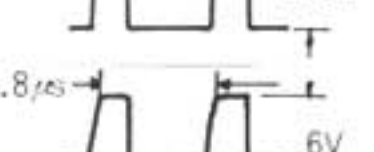






Reference voltage of each pin of IC201 (Fig. 22)

	Start	Stop		Start	Stop		Start	Stop
1	9.4V 	9.4V	7	 4.5V	Same as at left	11	0 V	0 V
2	Same as at left	Same as at left	8	 8V	0 V	12	6 V	6 V
3	Same as at left	Same as at left	9	 4.2V	4.3V	13	 3.5V	Same as at left
4	0 V	3.2V	10	 1 V	Same as at left	14	0.2V	0.2V
5	2.0V	0 V	11			15	 7V	Same as at left
6	 4.2V	Same as at left	12			16	 7V	0 V

Reference voltage of each pin of IC301 (Fig. 23)

	Start	Stop		Start	Stop		Start	Stop
1			17	 4.8V	Same as at left	23	2.4V	Same as at left
2	4.9V	4.9V	18			24	2.4V	Same as at left
3			19	 4.6V	Same as at left	25	 5V	Same as at left
4 8			20			26	 4.2V	Same as at left
5 9	0 V	0 V	21	 5.9V	Same as at left	27	5 V	5 V
6 10			22	 6V	Same as at left	28	5 V	5 V
7								
10 13	 4V	Same as at left						
11 14								
12 15								
16	 4.2V	Same as at left						

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 1400MK2 (M) → [M]
SL 1400MK2 (MC) → [MC]

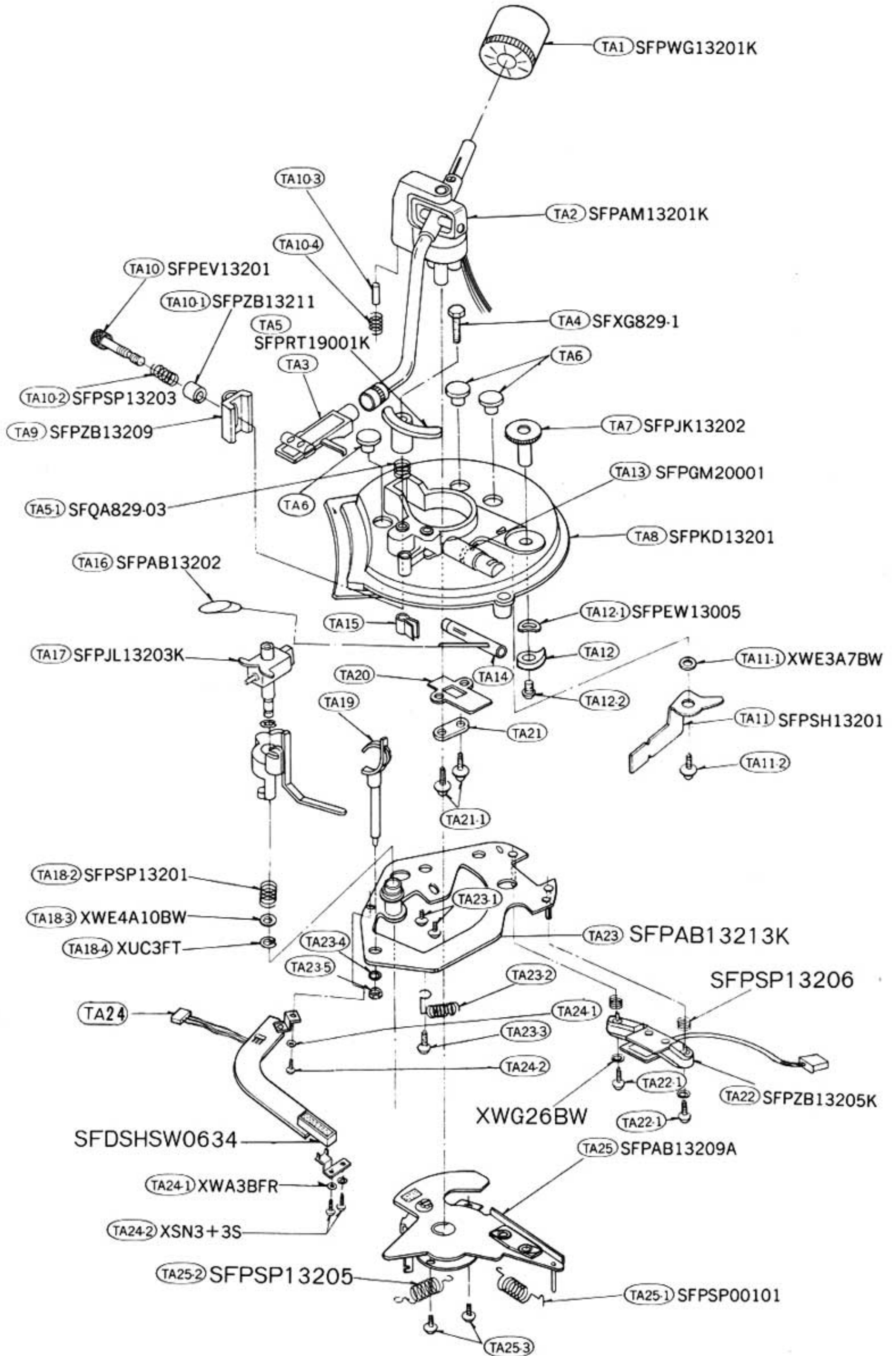
Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
INTEGRATED CIRCUITS				
IC101	AN640	Drive Circuit	1	
IC201	DN860	Frequency Divider Circuit	1	
IC202	AN660	Control Circuit	1	
IC301	MN6042	Pitch Control Circuit	1	
IC401	SVIMSM4069	Start & Stop Logic Circuit (NOT)	1	
IC402	SVIMSM4075	Start & Stop Logic Circuit (OR)	1	
IC501	SVIMSM4011	Optical Censor Return Pulse Circuit (NAND)	1	
TRANSISTORS				
TR1, 4, 7	2SC1826-Y	Transistors (Use in ranks O or Y or G)	3	
TR2, 3, 6, 8, 406	2SC1328-T	Transistors	5	
TR5	2SC1384A-Q	Transistor (Use in ranks O 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 (Use in pair ranks Q or R or S)	1	
TR104	2SC1406-Q	Transistor	1	
TR105	2SA752-Q	Transistor (Use in pair ranks Q or R or S)	1	
TR106	2SC1406-Q	Transistor	1	
TR107, 108, 111, 301, 302, 505	2SA666A1-R	Transistor (Use in ranks Q or R or S)	6	
TR109, 110, 112, 201, 202, 203, 204, 205, 206, 207, 303, 402, 404, 409, 410, 501, 502, 503, 504	2SC1328-T	Transistor	19	
TR304, 305, 306	2SA719-P	Transistors (Use in ranks P or O or R or S)	3	
TR408	2SC1384-Q	Transistors (Use in ranks O or R or S)	1	
DIODES				
D1, 2	SVDSIRBA20	Rectifier	2	
D3, 301	SVDRD5.1EBS	5.1V Zener, Voltage Stabilizer	2	
D101, 202, 302, 501, 502, 503	MA150	Diodes	6	
D201	SVDRD9.1EBS	9.1V Zener, Voltage Stabilizer	1	
D203	SVDGL-7R204	Light Emitting Diode (r.p.m)	1	
D204, 205, 206, 207, 208, 209, 210, 401, 402	SVDSR105C	Light Emitting Diode	9	
D303	SVDGL-7R203	Light Emitting Diode (pitch)	1	
CRYSTAL				
X204	SVOU306115	4.19328MHz Oscillator	1	
TRANSFORMER				
T1	SLT60EU3B	Power Transformer	1	
FUSE				
F1	XBA2F04NU100	400mA (Fuse)	1	
F2 [MC only]	XBA2F10NU100	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	FVOP4R04K	Start or Stop Switches	2	
S501	SFDSA73502	Arm Switch	1	
S502	ESB6015	Return Cut Switch	1	
S601	SFSS5GL2	Power Switch	1	
	SFDSHSW0634	Muting Switch, Tone Arm	1	
RESISTORS				
R1	ERD25TJ562	Carbon, 5.6k Ω , 1/4W, \pm 5%	1	
R2	ERD25TJ102	Carbon, 1k Ω , 1/4W, \pm 5%	1	
R3	ERD25TJ152	Carbon, 1.5k Ω , 1/4W, \pm 5%	1	
R4	ERD25TJ151	Carbon, 150 Ω , 1/4W, \pm 5%	1	
R5	ERD25TJ152	Carbon, 1.5k Ω , 1/4W, \pm 5%	1	
R6	ERD25TJ562	Carbon, 5.6k Ω , 1/4W, \pm 5%	1	
R7	ERD25TJ123	Carbon, 12k Ω , 1/4W, \pm 5%	1	
R8	ERD25TJ472	Carbon, 4.7k Ω , 1/4W, \pm 5%	1	
R9	ERG3ANJ470	Metal Film, 47 Ω , 3W, \pm 5%	1	
R101, 102, 103	ERX1ANJ470	Metal Film, 47 Ω , 1W, \pm 5%	3	
R104, 105, 106	ERX1ANJ150	Metal Film, 15 Ω , 1W, \pm 5%	3	
R107	ERD25TJ472	Carbon, 4.7k Ω , 1/4W, \pm 5%	1	
R108	ERD25TJ392	Carbon, 3.9k Ω , 1/4W, \pm 5%	1	
R109	ERD25TJ150	Carbon, 15 Ω , 1/4W, \pm 5%	1	
R110, 111	ERD25TJ103	Carbon, 10k Ω , 1/4W, \pm 5%	2	
R112	ERD25TJ472	Carbon, 4.7k Ω , 1/4W, \pm 5%	1	
R113	ERX1ANJ1R8	Metal Film, 1.8 Ω , 1W, \pm 5%	1	
R114	ERD25TJ473	Carbon, 47k Ω , 1/4W, \pm 5%	1	
R115	ERD25TJ103	Carbon, 10k Ω , 1/4W, \pm 5%	1	
R116	ERD25TJ332	Carbon, 3.3k Ω , 1/4W, \pm 5%	1	
R117	ERD25TJ103	Carbon, 10k Ω , 1/4W, \pm 5%	1	
R118	ERD25TJ153	Carbon, 15k Ω , 1/4W, \pm 5%	1	
R119	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%	1	
R120	ERD25TJ563	Carbon, 56k Ω , 1/4W, \pm 5%	1	
R121	ERD25TJ102	Carbon, 1k Ω , 1/4W, \pm 5%	1	
R122, 123	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%	2	
R124	ERD25TJ103	Carbon, 10k Ω , 1/4W, \pm 5%	1	
R125	ERD25TJ393	Carbon, 39k Ω , 1/4W, \pm 5%	1	
R126	ERD25TJ103	Carbon, 10k Ω , 1/4W, \pm 5%	1	
R201	ERX1ANJ101	Metal Film, 100 Ω , 1W, \pm 5%	1	
R202	ERD25TJ473	Carbon, 47k Ω , 1/4W, \pm 5%	1	
R203	ERD25TJ393	Carbon, 39k Ω , 1/4W, \pm 5%	1	
R204	ERD25TJ102	Carbon, 1k Ω , 1/4W, \pm 5%	1	
R205	ERD25TJ471	Carbon, 470 Ω , 1/4W, \pm 5%	1	
R206, 207	ERD25TJ333	Carbon, 33k Ω , 1/4W, \pm 5%	2	
R208	ERD25TJ563	Carbon, 56k Ω , 1/4W, \pm 5%	1	
R209	ERD25TJ222	Carbon, 2.2k Ω , 1/4W, \pm 5%	1	
R210	ERD25TJ151	Carbon, 150 Ω , 1/4W, \pm 5%	1	
R211	ERD25TJ221	Carbon, 220 Ω , 1/4W, \pm 5%	1	
R212	ERD25TJ222	Carbon, 2.2k Ω , 1/4W, \pm 5%	1	
R213	ERD25TJ223	Carbon, 22k Ω , 1/4W, \pm 5%	1	
R214	ERD25TJ563	Carbon, 56k Ω , 1/4W, \pm 5%	1	
R215	ERD25TJ823	Carbon, 82k Ω , 1/4W, \pm 5%	1	
R216	ERD25TJ333	Carbon, 33k Ω , 1/4W, \pm 5%	1	
R217	ERD25TJ123	Carbon, 12k Ω , 1/4W, \pm 5%	1	
R218	ERD25TJ102	Carbon, 1k Ω , 1/4W, \pm 5%	1	
R219, 220	ERD25TJ471	Carbon, 470 Ω , 1/4W, \pm 5%	2	
R221	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%	1	
R222	ERD25TJ563	Carbon, 56k Ω , 1/4W, \pm 5%	1	
R223	ERD25TJ472	Carbon, 4.7k Ω , 1/4W, \pm 5%	1	

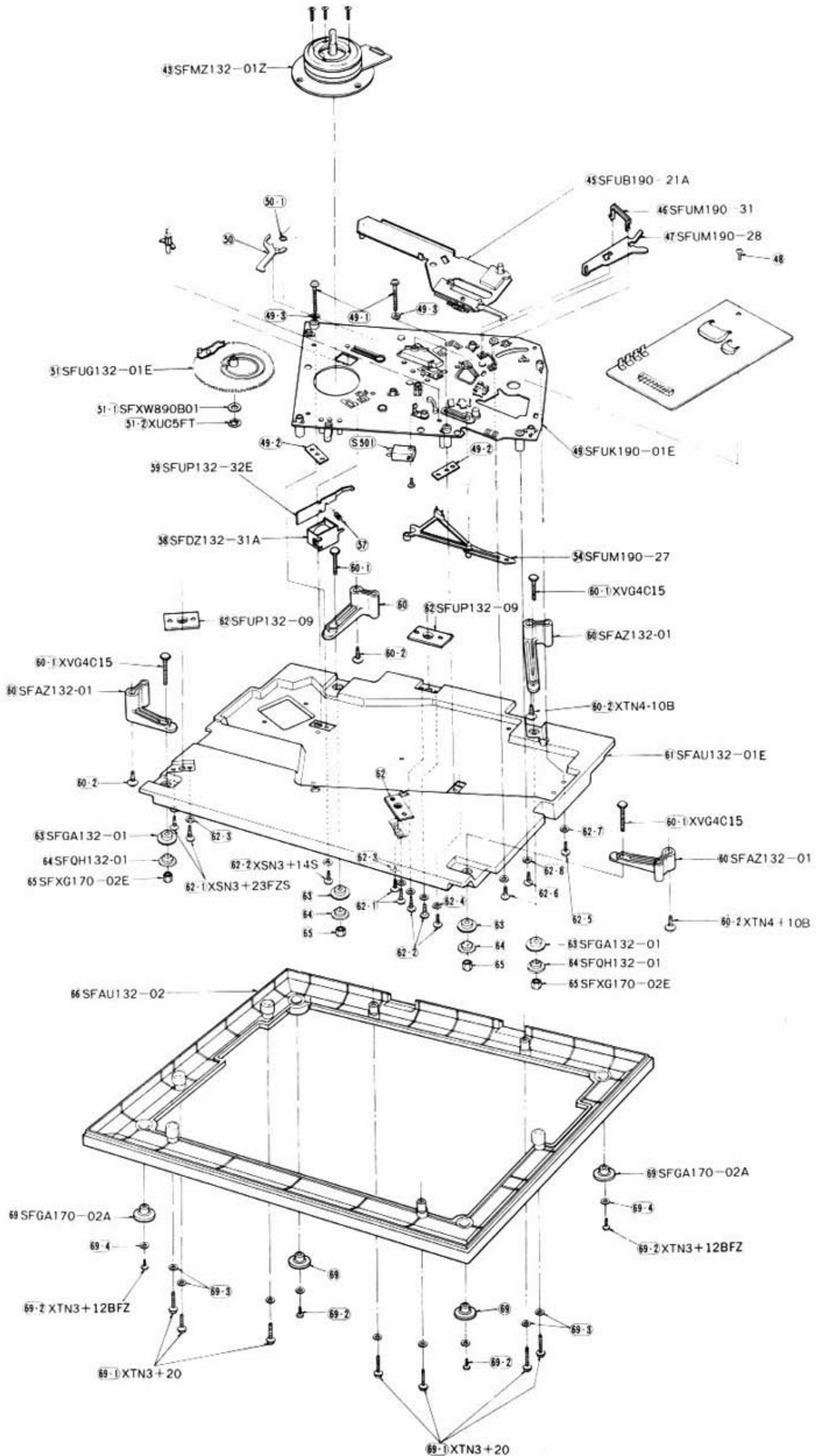
Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R224	ERD25TJ473	Carbon, 47k Ω , 1/4W, \pm 5%	1	
R225	ERD25TJ101	Carbon, 100 Ω , 1/4W, \pm 5%	1	
R226	ERD25TJ681	Carbon, 680 Ω , 1/4W, \pm 5%	1	
R227	ERD25TJ153	Carbon, 15k Ω , 1/4W, \pm 5%	1	
R228	ERD25TJ563	Carbon, 56k Ω , 1/4W, \pm 5%	1	
R229	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%	1	
R230	ERD25TJ103	Carbon, 10k Ω , 1/4W, \pm 5%	1	
R231	ERD25TJ121	Carbon, 120 Ω , 1/4W, \pm 5%	1	
R232	ERD25TJ680	Carbon, 68 Ω , 1/4W, \pm 5%	1	
R233	ERD25TJ223	Carbon, 22k Ω , 1/4W, \pm 5%	1	
R234	ERD25TJ472	Carbon, 4.7k Ω , 1/4W, \pm 5%	1	
R301	ERD25TJ391	Carbon, 390 Ω , 1/4W, \pm 5%	1	
R302	ERD25TJ272	Carbon, 2.7k Ω , 1/4W, \pm 5%	1	
R303	ERD25TJ102	Carbon, 1k Ω , 1/4W, \pm 5%	1	
R304	ERD25TJ103	Carbon, 10k Ω , 1/4W, \pm 5%	1	
R305	ERD25TJ472	Carbon, 4.7k Ω , 1/4W, \pm 5%	1	
R306	ERD25TJ102	Carbon, 1k Ω , 1/4W, \pm 5%	1	
R307	ERD25TJ332	Carbon, 3.3k Ω , 1/4W, \pm 5%	1	
R308	ERD25TJ273	Carbon, 27k Ω , 1/4W, \pm 5%	1	
R309, 310	ERD25TJ473	Carbon, 47k Ω , 1/4W, \pm 5%	2	
R311	ERD25TJ222	Carbon, 2.2k Ω , 1/4W, \pm 5%	1	
R312, 313	ERD25TJ153	Carbon, 15k Ω , 1/4W, \pm 5%	2	
R314	EXBRB7121M	Composite Resistor, 120 Ω , x 7, \pm 20%	1	
R315, 316, 317	ERD25TJ152	Carbon, 1.5k Ω , 1/4W, \pm 5%	3	
R318	ERD25TJ221	Carbon, 220 Ω , 1/4W, \pm 5%	1	
R319	ERD25TJ121	Carbon, 120 Ω , 1/4W, \pm 5%	1	
R320	ERD25TJ680	Carbon, 68 Ω , 1/4W, \pm 5%	1	
R401, 402, 403	ERD25TJ471	Carbon, 470 Ω , 1/4W, \pm 5%	3	
R404, 405, 406	ERD25TJ103	Carbon, 10k Ω , 1/4W, \pm 5%	3	
R407, 408	ERD25TJ223	Carbon, 22k Ω , 1/4W, \pm 5%	2	
R409, 410	ERD25TJ683	Carbon, 68k Ω , 1/4W, \pm 5%	2	
R411, 412	ERD25TJ684	Carbon, 680k Ω , 1/4W, \pm 5%	2	
R413	ERD25TJ563	Carbon, 56k Ω , 1/4W, \pm 5%	1	
R414	ERD25TJ124	Carbon, 120k Ω , 1/4W, \pm 5%	1	
R415, 416	ERD25TJ473	Carbon, 47k Ω , 1/4W, \pm 5%	2	
R417, 418	ERD25TJ104	Carbon, 100k Ω , 1/4W, \pm 5%	2	
R419	ERD25TJ471	Carbon, 470 Ω , 1/4W, \pm 5%	1	
R420, 421	ERD25TJ103	Carbon, 10k Ω , 1/4W, \pm 5%	2	
R501	ERD50TJ681	Carbon, 680 Ω , 1/2W, \pm 5%	1	
R502	ERD25TJ123	Carbon, 12k Ω , 1/4W, \pm 5%	1	
R503	ERD25TJ183	Carbon, 18k Ω , 1/4W, \pm 5%	1	
R504	ERD25TJ183	Carbon, 18k Ω , 1/4W, \pm 5%	1	
R505	ERD25TJ184	Carbon, 180k Ω , 1/4W, \pm 5%	1	
R506, 507	ERD25TJ274	Carbon, 270k Ω , 1/4W, \pm 5%	2	
R508	ERD25TJ393	Carbon, 39k Ω , 1/4W, \pm 5%	1	
R509	ERD25TJ221	Carbon, 220 Ω , 1/4W, \pm 5%	1	
R510	ERD25TJ824	Carbon, 820k Ω , 1/4W, \pm 5%	1	
R511	ERD25TJ333	Carbon, 33k Ω , 1/4W, \pm 5%	1	
R512	ERD25TJ183	Carbon, 18k Ω , 1/4W, \pm 5%	1	
R513	ERD25TJ473	Carbon, 47k Ω , 1/4W, \pm 5%	1	
R514	ERD25TJ123	Carbon, 12k Ω , 1/4W, \pm 5%	1	
R515	ERD25TJ472	Carbon, 4.7k Ω , 1/4W, \pm 5%	1	
R516	ERD25TJ473	Carbon, 47k Ω , 1/4W, \pm 5%	1	
R517	ERD25TJ393	Carbon, 39k Ω , 1/4W, \pm 5%	1	
R601	ERD50TJ4R7	Carbon, 4.7 Ω , 1/2W, \pm 5%	1	
R1501, 1502	ERD25TJ102	Carbon, 1k Ω , 1/4W, \pm 5%	2	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
VARIABLE RESISTORS				
VR101	EVLS3AA00B14	Period Adjustment	1	
VR201	EVLS3AA00B24	VS Adjustment	1	
VR202	EVLS3AA00B24	IR Adjustment	1	
VR203	EVLS3AA00B54	Brake Adjustment	1	
VR501	EVLS3AA00B24	Gain Adjustment	1	
VR502	EVLS3AA00B55	Time Adjustment	1	
CAPACITORS				
C1	ECEB35V330	Electrolytic, 330 μ F, 35V	1	
C2	ECEA25V33	Electrolytic, 33 μ F, 25V	1	
C3	ECEA16V10	Electrolytic, 10 μ F, 16V	1	
C4	ECEA16V47	Electrolytic, 47 μ F, 16V	1	
C5	ECEB50V470	Electrolytic, 470 μ F, 50V	1	
C6	ECEA25V33	Electrolytic, 33 μ F, 25V	1	
C101, 102, 103	ECEA25V33	Electrolytic, 33 μ F, 25V	3	
C104	ECQM1H104KZ	Polyester, 0.1 μ F, 50V, $\pm 10\%$	1	
C105	ECSZ25EF1	Electrolytic, 1 μ F, 25V	1	
C106	ECSZ25EF2R2	Electrolytic, 2.2 μ F, 25V	1	
C107	ECSZ25EF1	Electrolytic, 1 μ F, 25V	1	
C108	ECQM1H223KZ	Polyester, 0.022 μ F, 50V, $\pm 10\%$	1	
C109	ECEA25Z100	Electrolytic, 100 μ F, 25V	1	
C110	ECQM05154KZ	Polyester, 0.15 μ F, 50V, $\pm 10\%$	1	
C111	ECQM1H333KZ	Polyester, 0.033 μ F, 50V, $\pm 10\%$	1	
C112	ECQM1H104KZ	Polyester, 0.1 μ F, 50V, $\pm 10\%$	1	
C113	ECQM1H562KZ	Polyester, 0.0056 μ F, 50V, $\pm 10\%$	1	
C114	ECEA25V100	Electrolytic, 100 μ F, 25V	1	
C115	ECEA16V10	Electrolytic, 10 μ F, 16V	1	
C201	ECKD1E104ZFZ	Ceramic, 0.1 μ F, 50V	1	
C202	ECEA25V2R2	Electrolytic, 2.2 μ F, 25V	1	
C203	ECSZ25EF2R2	Electrolytic, 2.2 μ F, 25V	1	
C204	ECCD1H330K	Ceramic, 33pF, 50V, $\pm 10\%$	1	
C205, 206	ECCD1H331K	Ceramic, 330pF, 50V, $\pm 10\%$	2	
C207	ECQM1H822KZ	Polyester, 0.0082 μ F, 50V, $\pm 10\%$	1	
C208, 209	ECSZ25EF1	Electrolytic, 1 μ F, 25V	2	
C210	ECQM1H103KZ	Polyester, 0.01 μ F, 50V, $\pm 10\%$	1	
C211	ECQM1H563KZ	Polyester, 0.056 μ F, 50V, $\pm 10\%$	1	
C212	ECQM1H104KZ	Polyester, 0.1 μ F, 50V, $\pm 10\%$	1	
C213	ECEA16V10	Electrolytic, 10 μ F, 16V	1	
C214	ECQM1H562KZ	Polyester, 0.0056 μ F, 50V, $\pm 10\%$	1	
C215	ECQM1H562KZ	Polyester, 0.0056 μ F, 50V, $\pm 10\%$	1	
C216, 217	ECQM1H104KZ	Polyester, 0.1 μ F, 50V, $\pm 10\%$	2	
C218	ECQM1H562KZ	Polyester, 0.0056 μ F, 50V, $\pm 10\%$	1	
C219, 220	ECQM1H104KZ	Polyester, 0.1 μ F, 50V, $\pm 10\%$	2	
C221	ECKD1E104ZFZ	Ceramic, 0.1 μ F, 50V	1	
C222	ECEA50V4R7	Electrolytic, 4.7 μ F, 50V	1	
C223	ECEA50V1	Electrolytic, 1 μ F, 50V	1	
C224	ECEA16V10	Electrolytic, 10 μ F, 16V	1	
C225	ECQM1H473KZ	Polyester, 0.047 μ F, 50V, $\pm 10\%$	1	
C226, 227	ECQM1H104KZ	Polyester, 0.1 μ F, 50V, $\pm 10\%$	2	
C228	ECEA16V47	Electrolytic, 47 μ F, 16V	1	
C229	ECQM1H103KZ	Polyester, 0.01 μ F, 50V, $\pm 10\%$	1	
C230	ECQM1H102KZ	Polyester, 0.001 μ F, 50V, $\pm 10\%$	1	
C231	ECKD1E104ZFZ	Ceramic, 0.1 μ F, 50V	1	
C301	ECEA16V10	Electrolytic, 10 μ F, 16V	1	
C302	ECQM1H102KZ	Polyester, 0.001 μ F, 50V, $\pm 10\%$	1	
C303	ECQM1H103KZ	Polyester, 0.01 μ F, 50V, $\pm 10\%$	1	

EXPLODED VIEW



EXPLODED VIEW



Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
60	SFAZ132-01	Insulator (A)	4	
60-1	XVG4C15	Screw, Insulator (A)	1	
60-2	XTN4+10B	Screw, Insulator (A)	1	
61	SFAU132-01E	Base, Main	1	
62	SFUP132-09	Bracket, Main Base	3	
62-1	XSN3+23FZS	Screw, Main Base Bracket	4	
62-2	XSN3+14S	Screw, Main Base Bracket	4	
62-3	XWG3	Washer, Main Base Bracket	4	
62-4	XWG3	Washer, Main Base Bracket	4	
62-5	XTN4+35B	Screw, Main Base	2	
62-6	XTN3+35B	Screw, Main Base	6	
62-7	XWG4	Washer, Main Base	2	
62-8	XWG3	Washer, Main Base	6	
63	SFGA132-01	Rubber, Insulator (A)	4	
64	SFQH132-01	Spring, Insulator (A)	4	
65	SFXG170-02E	Nut, Insulator (A)	4	
66	SFAU132-02A	Bottom, Cover	1	
69	SFGA170-02A	Insulator (B)	4	
69-1	XTN3+20	Screw, Bottom Cover	7	
69-2	XTN3+10BFZ	Screw, Insulator (B)	4	
69-3	XWG3	Washer, Bottom Cover	7	
69-4	XWG4	Washer, Insulator (B)	4	
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	SFOA829-03	Spring, Lift Ass'y	1	
TA6	SFGK132M01	Cap, Rubber	3	
			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	1	
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	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
TA18-2	SFPSP13201	Spring, Arm Lift Base	1	
TA18-3	XWE4A10BW	Washer, Arm Lift Base	1	
TA18-4	XUC3FT	Circlip, Arm Lift Base	1	
TA19	SFPRT13201K	Arm Rest	1	
TA20	SFPAB13203	Plate, Lift	1	
TA21	SFPZB13208	Support, Lift	1	
TA21-1	XTN3+5B	Screw, Lift Support	2	
TA22	SFPZB13205K	Support, P.C.B	1	
TA22-1	XSN26+8S	Screw, Support	2	
TA23	SFPAB13213K	Base, Arm Lift	1	
TA23-1	XSN3+5S	Screw, Arm Lift Base	2	
TA23-2	SFPSP13202	Spring	1	
TA23-3	XSN3+3S	Screw, Spring	1	
TA23-4	XWA26B	Washer, Arm Rest	1	
TA23-5	XNG26BFN	Nut, Arm Rest	1	
TA24	SFPAB13218K	Cord, PU Output Ass'y	1	
TA24-1	XWA3B	Washer, P.C.B. Ass'y	2	
TA24-2	XSN3+3S	Screw, P.C.B. Ass'y	2	
TA25	SFPAB13209A	Tone Arm Fixing Plate Ass'y	1	
TA25-1	SFPSP00101	Spring	1	
TA25-2	SFPSP13205	Spring, Tone Arm Fixing Plate Ass'y	1	
TA25-3	XSN3+6S	Screw	2	
ACCESSORIES				
A1 [M]	SFNU142M01	Instruction Book	1	○
A1 [MC]	SFNU142C01	Instruction Book	1	○
A2	SFWE154A1	Adaptor, 45 r.p.m	1	
A3	SFCFB20502	Driver, Screw	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]	SFHP142M01	Carton	1	○
P1 [MC]	SFHP142C01	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	

PACKINGS

