

Service Manual

Turntable System

SL-D1

(M), (MC)

SL-D1



- The model SL-D1 (M) is available in America only.
- The model SL-D1 (MC) is available in Canada only.

Specifications Specifications are subject to change without notice.
Weights and dimensions shown are approximate.

General

Power supply: 120 V, 50 or 60 Hz
Power consumption: 4 W
Dimensions: 43.0 x 13.0 x 37.5 cm
 (W x H x D) (16-59/64 x 5-7/64 x 14-49/64 inches)
Weight: 6.6 kg (14.6 lb.)

Turntable section

Type: manual

Drive method: Direct drive
Motor: Brushless DC motor
Drive control method: B-FG servo control
Turntable platter: Aluminum die-cast
Turntable speeds: 33-1/3 rpm and 45 rpm
Pitch control: 10% adjustment range
Wow and flutter: 0.014% WRMS (*)
 0.03% WRMS (JIS C5521)
 $\pm 0.042\%$ peak (IEC 98A Weighted)

* This rating refers to turntable assembly alone, excluding effects of record, cartridge or tonearm, but including platter measured by obtaining signal from frequency generator attached to motor assembly.

Rumble: -53 dB (IEC 98A Unweighted)
 -75 dB (IEC 98A Weighted)

Tonearm section

Type: Universal tonearm
Effective length: 230 mm (9-1/16")
Overhang: 15 mm (19/32")
Friction: Less than 7 mg (lateral, vertical)
Effective mass: 12 g (without cartridge)
Tracking error angle: Within $2^{\circ}32'$ at the outer groove of 30 cm (12") record
 Within $0^{\circ}32'$ at the inner groove of 30 cm (12") record
 22°

Offset angle:
Stylus pressure adjustment range: 0 - 2.5 g
Applicable cartridge weight range: 6 - 9.5 g
 13.5 - 17 g (including headshell)

Applicable cartridge weight range: 3 - 6.5 g
(with shellweight) 10.5 - 14 g (including headshell)
Headshell weight: 7.5 g

Technics

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

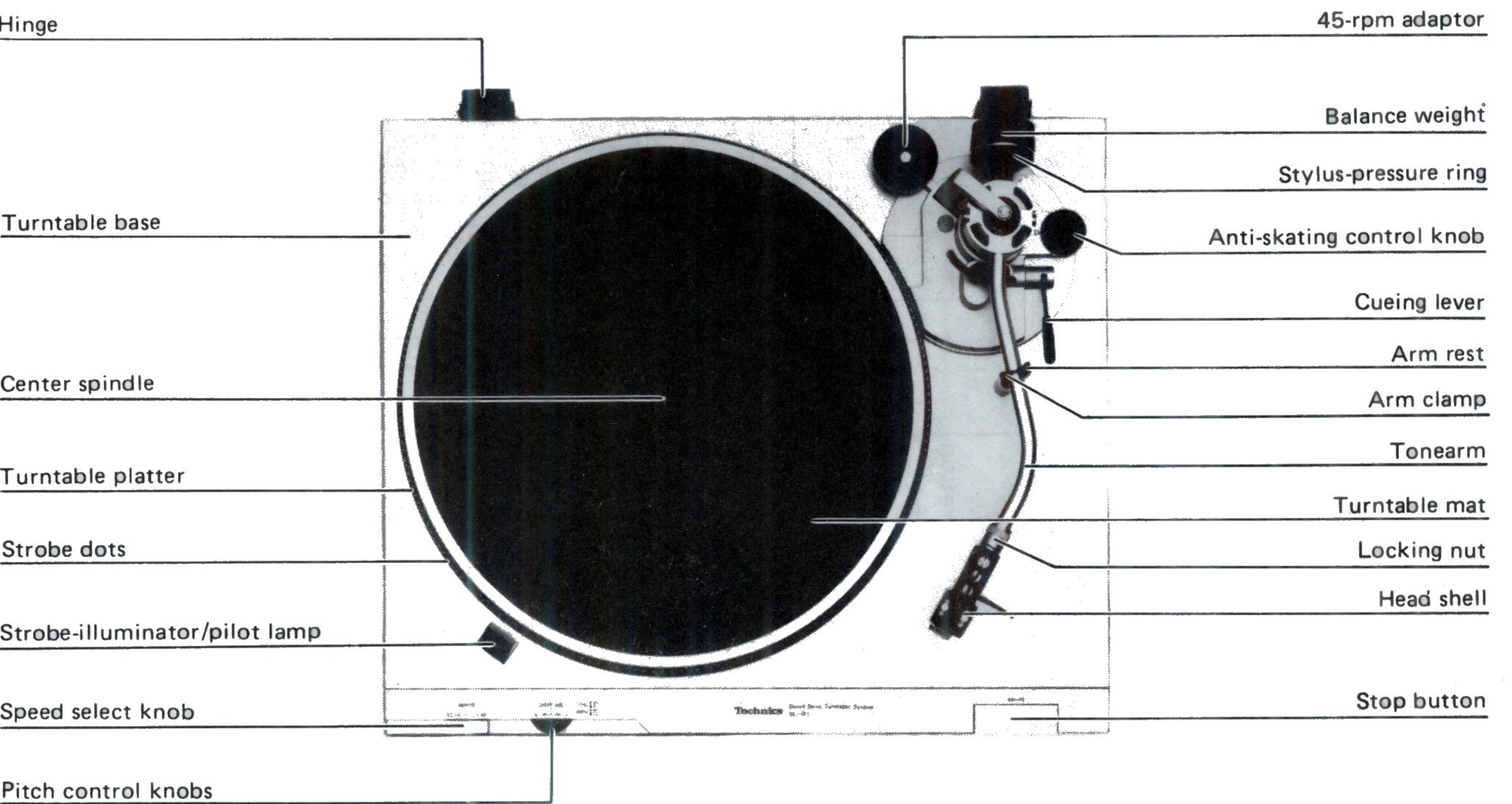
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 Hawaii 96817

Matsushita Electric of Canada Ltd.
 5770 Ambler Drive,
 Mississauga, Ontario
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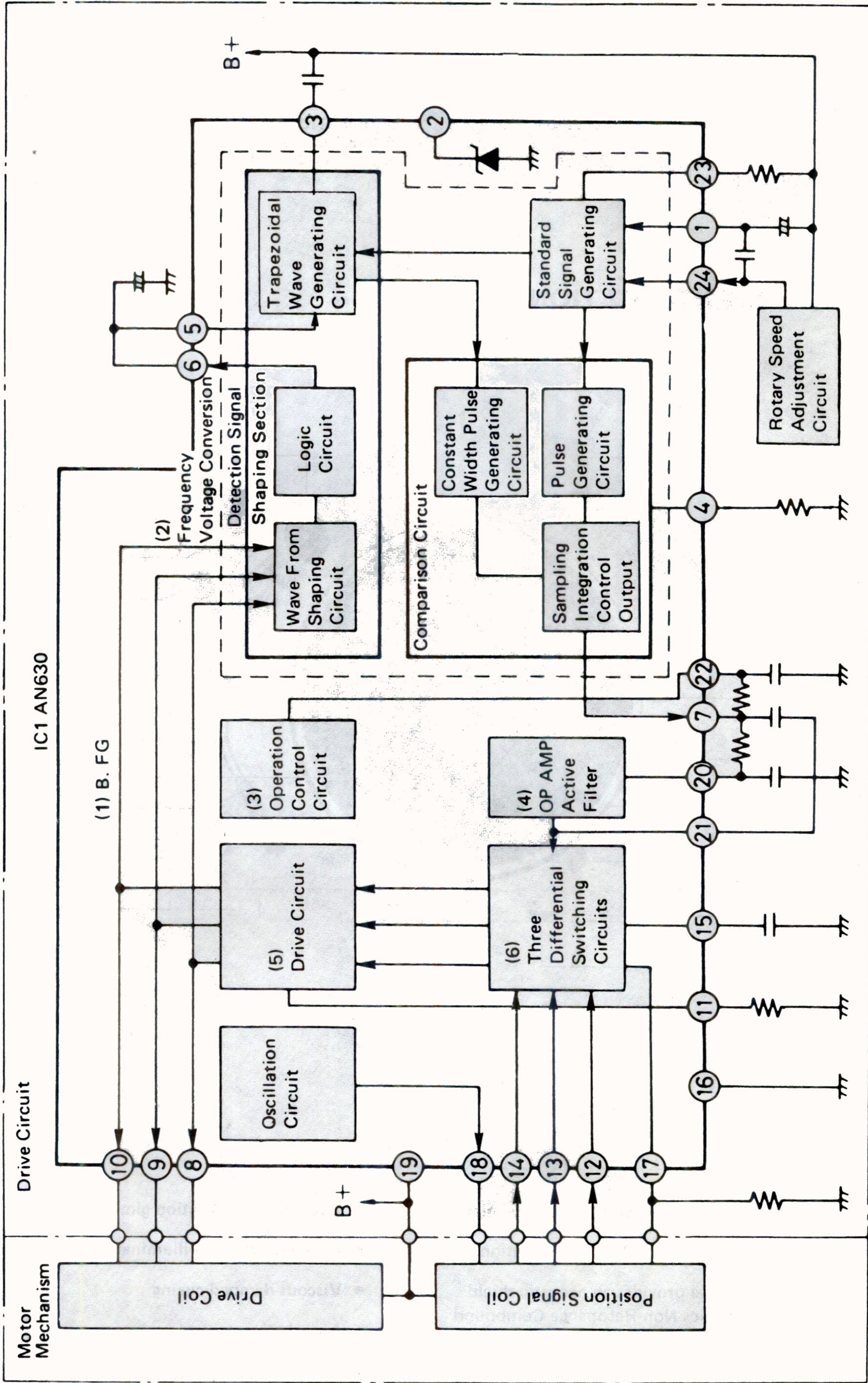
PARTS IDENTIFICATION



FEATURES

- Front panel controls provide exceptional convenience.
- Integral rotor/platter structure for stable rotation.
- "TNRC"* base material provides an acoustic shield
- Low-mass, low-friction gimbal suspension tonearm
- Pitch control with illuminated stroboscope
- Viscous-damped cueing
- Anti-skating control
- Hinged, detachable dust cover

■ BLOCK DIAGRAM



■ HOW TO OPERATE

1. Place a record on the turntable mat.
2. Set the speed select knob to the desired record speed.
(See Fig. 1.)

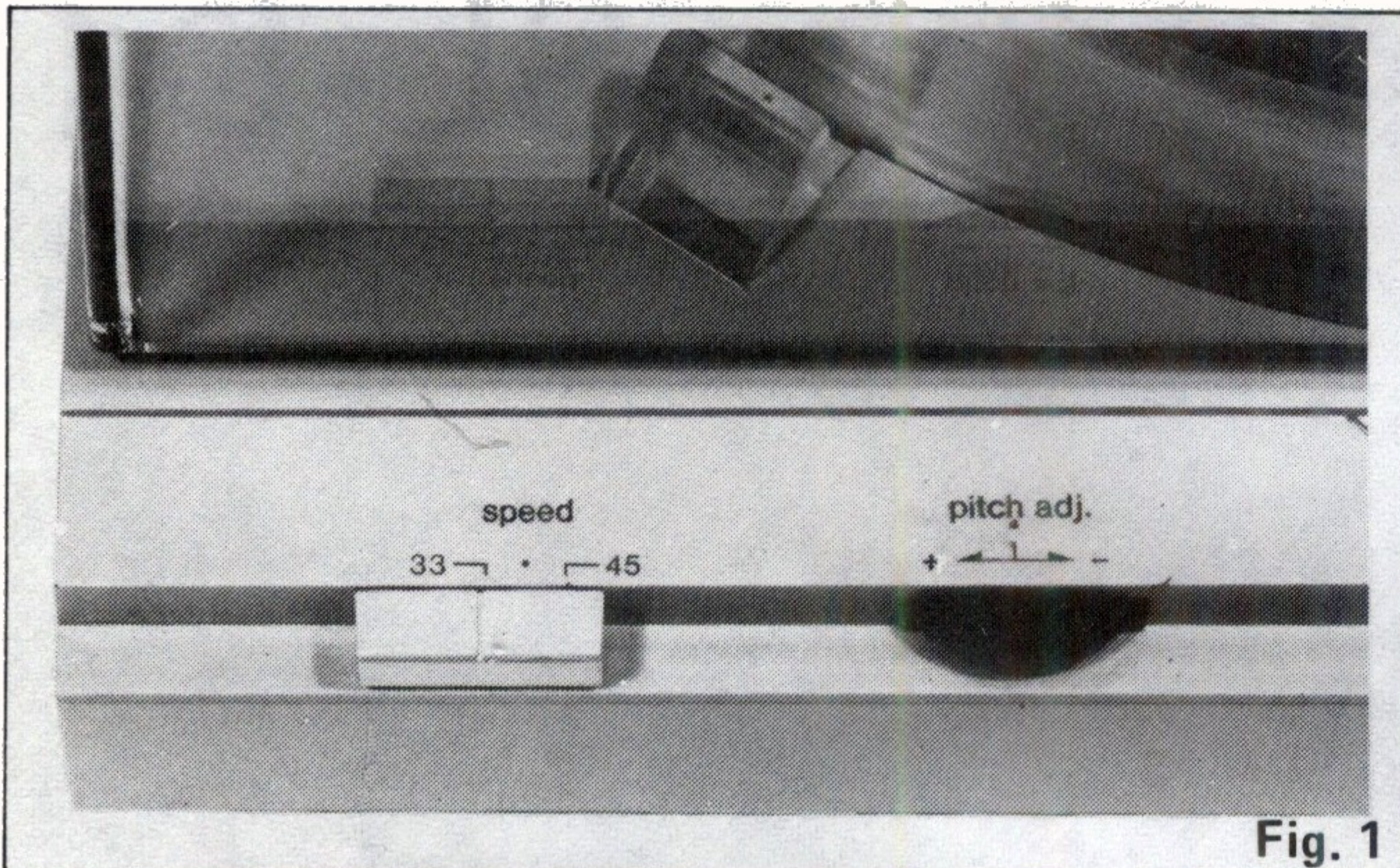


Fig. 1

3. Remove the stylus protector, if your cartridge has a detachable one.
4. Release the arm clamp.
5. Set the cueing lever to the "up" position. (See Fig. 2.)
6. Move the tonearm over the desired groove.
7. Set the cueing lever to the "down" position. (See Fig. 3.)

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

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



Fig. 2



Fig. 3

How to suspend play

Set the cueing lever to the "up" position.

The stylus tip of the cartridge will be lifted from the record.

When you play a 45-rpm record with a large center hole

Place the 45-rpm adaptor on the center spindle. Set the speed select knob to the "45" position.

If the unit is not to be used for some time

Secure the tonearm with the arm clamp.

Attach the stylus protector, if your cartridge has one, to guard the stylus from damage.

Close the dust cover.

Adjustment of overhang (See Fig. 4.)

1. Insert the headshell into the gauge.
2. Loosen the mounting screws and move the cartridge forward or backward until the stylus tip lines up with the edge of the gauge.
3. Tighten the mounting screws without moving the cartridge.

Note:

Your cartridge is now adjusted for lowest tracking error and minimum distortion.

This gauge is exclusively designed for this tonearm.

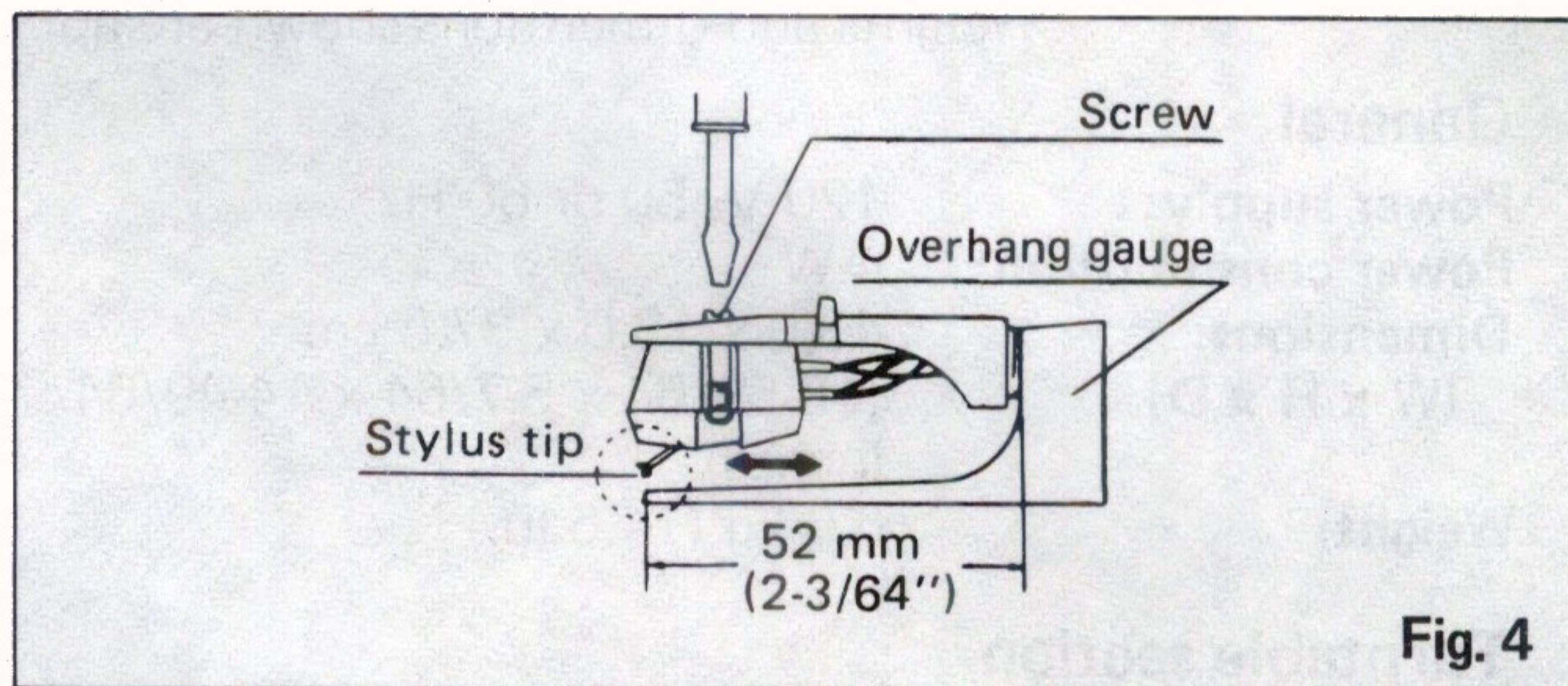


Fig. 4

Lubrication (See Fig. 4-1.)

Apply 2 or 3 drops of oil once after every 2000 hours of operation.

The time interval is much longer than that for conventional type motors (200 – 500 hours).

Please purchase original oil. (Part number is SFWO 010.)

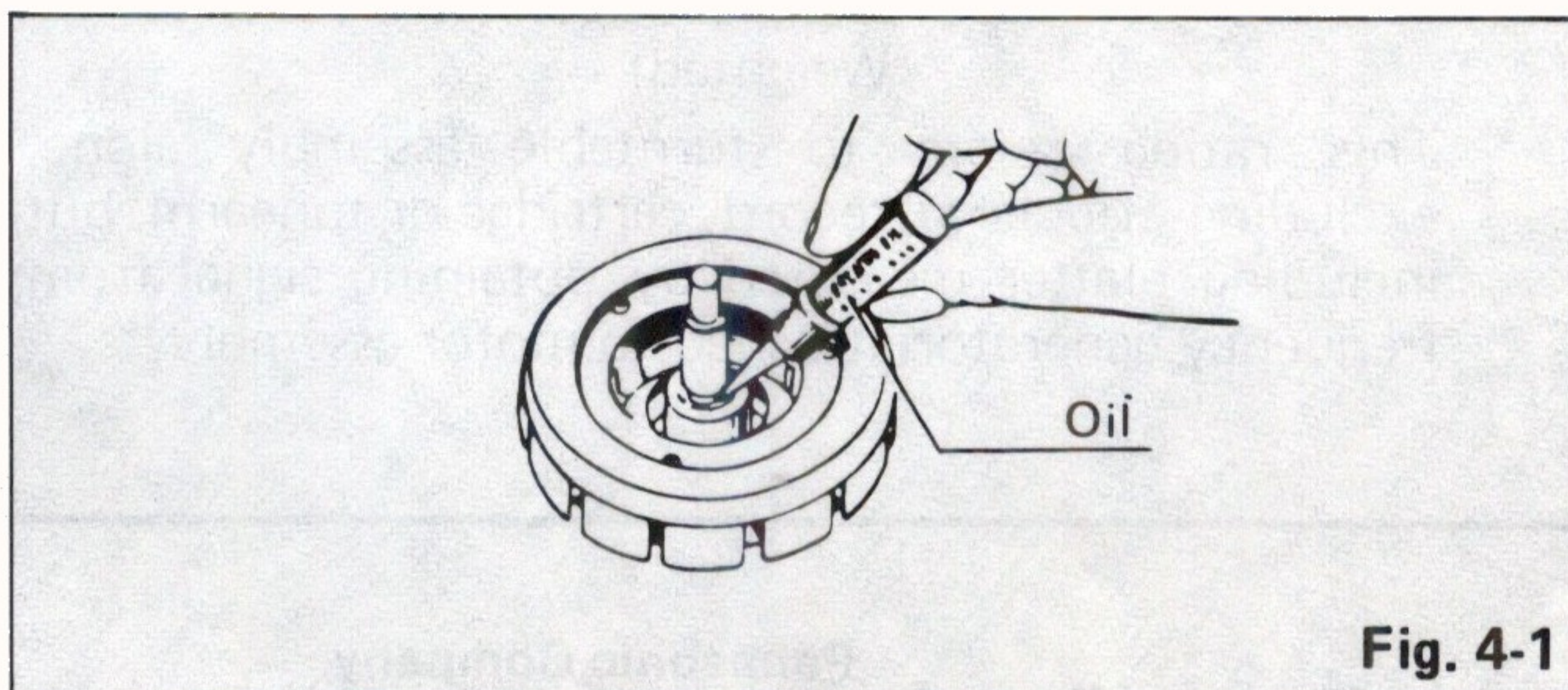


Fig. 4-1

■ ADJUSTMENTS

Adjustment of the arm-lift height

The arm-lift height (distance between the stylus tip and record surface when cueing lever is raised) has been adjusted at the factory before shipping to approximately 5 to 10 mm.

If the clearance becomes too narrow or too wide, turn the adjustment screw clockwise or counterclockwise, while pushing the arm lift down.

Clockwise rotation

—distance between the record and stylus tip is decreased.

Counterclockwise rotation

—distance between the record and stylus tip is increased.

Speed adjustment (with pitch-control knob) (See Fig. 5.)

Strobe dots are set on the rim of the turntable platter according to the power-line frequency and the speed of the records. Make adjustment, referring to the strobe-dot indication.

1. Set the speed select knob to the speed to be adjusted.
2. Release the arm clamp and move the tonearm toward the record.

The strobe-illuminator/pilot lamp will light up and the turntable platter will rotate.

3. While turning the pitch-control knob either to the "+" side or "-" side, adjust so that the strobe dots of the turntable platter look as if they were stationary. This represents the correct speed.

"+" direction

The speed of the turntable platter will increase. Turn the knob in this direction if the strobe dots seem to be "falling back", i.e. seem to be moving counterclockwise. When the dots appear to be stationary, turntable speed is accurate.

"-" direction

The speed of the turntable platter will decrease. Turn the knob in this direction if the dots seem to be "running ahead", i.e. seem to be moving clockwise, until they appear stationary.

Moreover, the speed fine control knob can be used both for 33-1/3 rpm and 45 rpm.

Adjustment is to be made according to the selected speed (33-1/3 rpm or 45 rpm).

Note:

Strobe dot pattern

The strobe-illuminator/pilot lamp of this unit employs the standard commercial power source. The frequency of such power source, when actually measured, has a fluctuation of about 0.2%.

As such a fluctuation of the power source affects the strobe illuminator, the strobe dot pattern also seems to fluctuate to a certain extent. But the unit is not affected by these fluctuations of the power source, since a DC motor is employed.

In other words, rotation of the platter will be constant, and slight shifts in the movement of the dots simply reflect normal drift in the power-source frequency.

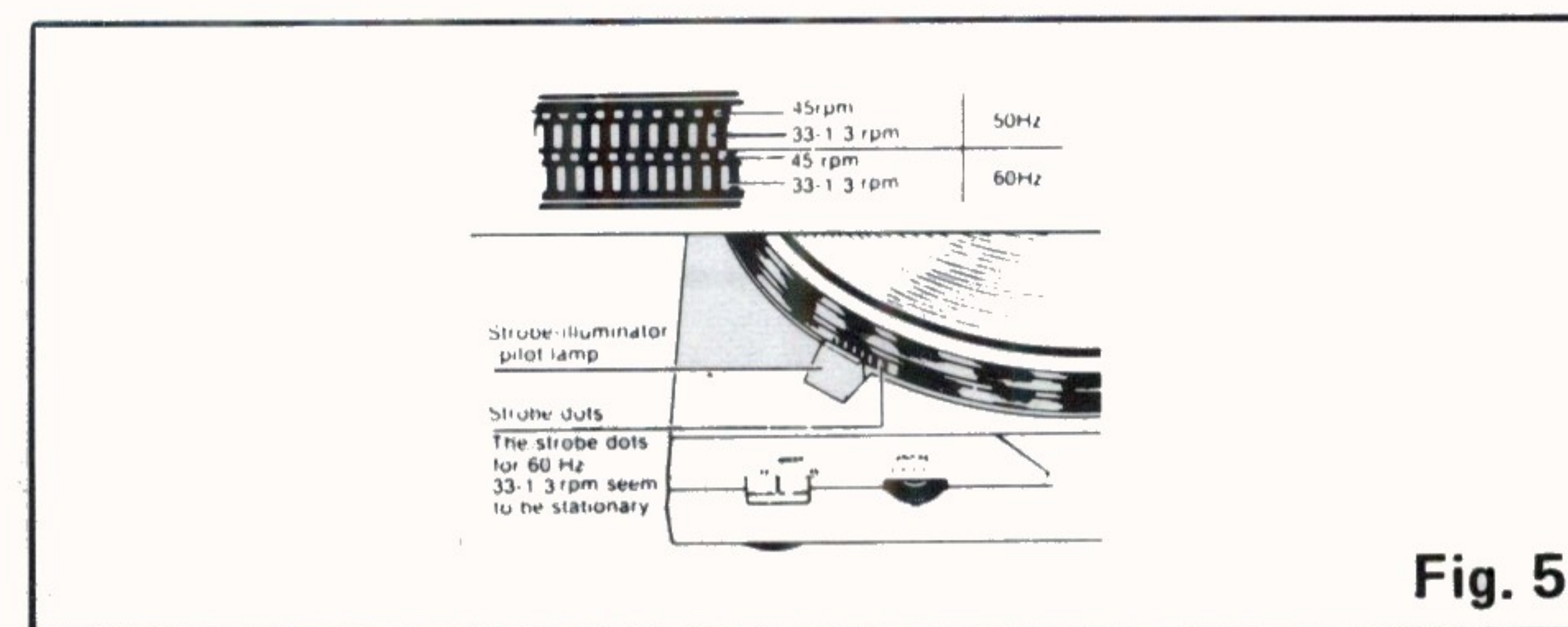


Fig. 5

■ ADJUSTMENT PROCEDURE

Adjustment of Speed (See Fig. 6)

If the number of revolutions cannot be correctly adjusted by replacing IC or other parts and turning the fine speed adjusting knob (VR3), make the re-adjustment according to the following procedure.

1. Set the fine speed adjusting knob to the central position.
2. In 33-1/3 r.p.m. mode, turn VR1 (33) so that the speed is adjusted to the specified point by using a stroboscope.
3. Next, in 45 r.p.m. mode, turn VR2 (45) so that the speed is adjusted to the specified point by using a stroboscope.
4. After the adjustment, shift the speed change switch and make sure that the speeds in 33-1/3 r.p.m. and 45 r.p.m. modes are as specified.

Note:

For the above adjustments, follow the disassembly procedure. Remove the bottom plate and put the set on a table for repair work and gain access to it from underneath.

It is also possible to adjust the set only with its turntable removed.

Remove the turntable as illustrated below, then a hole will be revealed from which a screwdriver can be inserted to turn VR1 and VR2.

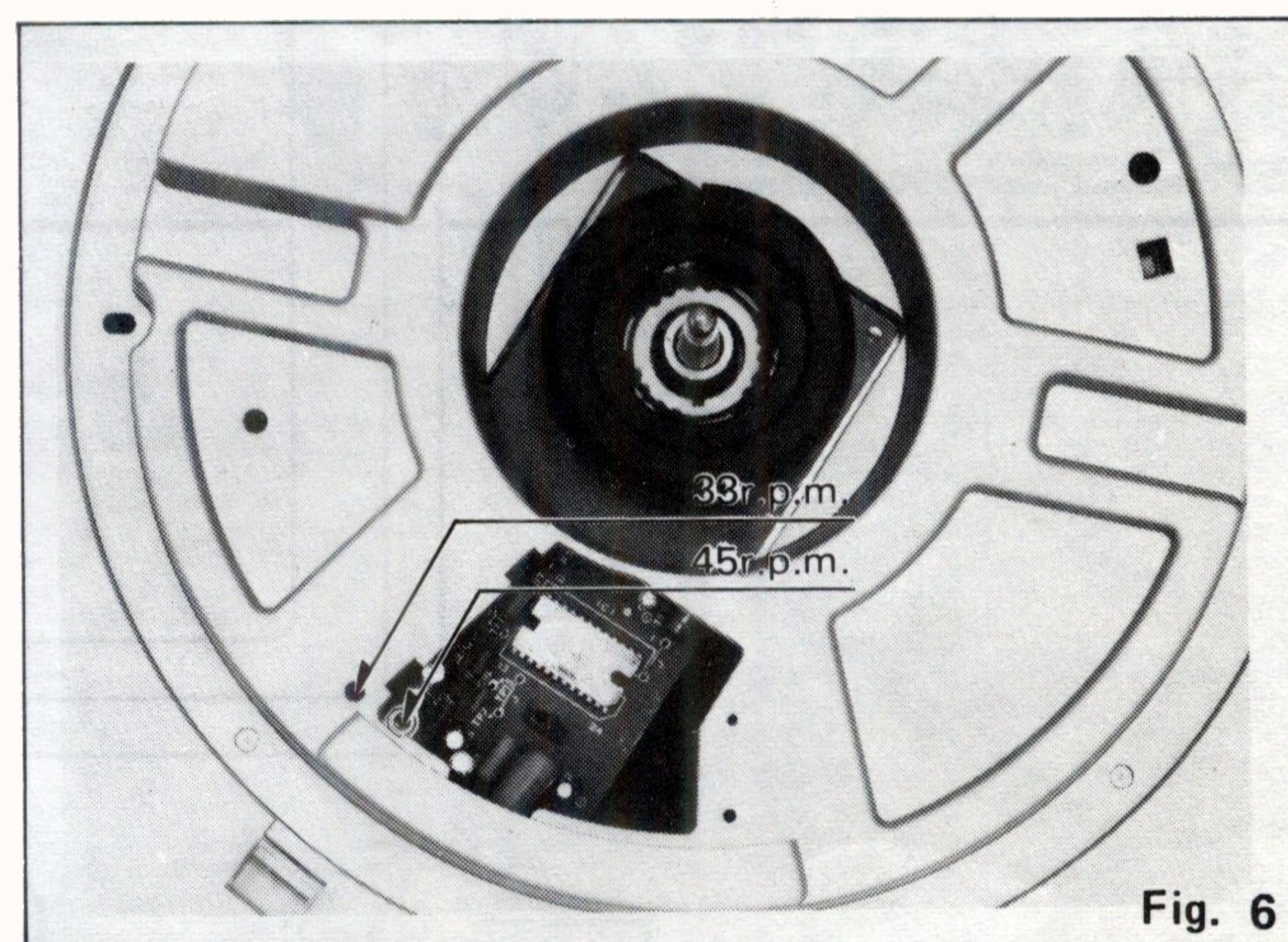


Fig. 6

■ DISASSEMBLY PROCEDURE

How to remove the bottom plate (See Fig. 7)

- 1) Remove the head shell and turntable.
- 2) Secure the tone arm with the arm clumper.
- 3) Turn over the set taking care not to damage the dust cover.
- 4) Remove the 7 bottom plate setscrews **A**.
Note) Be careful not to lose the boss cap attached to the insulator on the cabinet side.

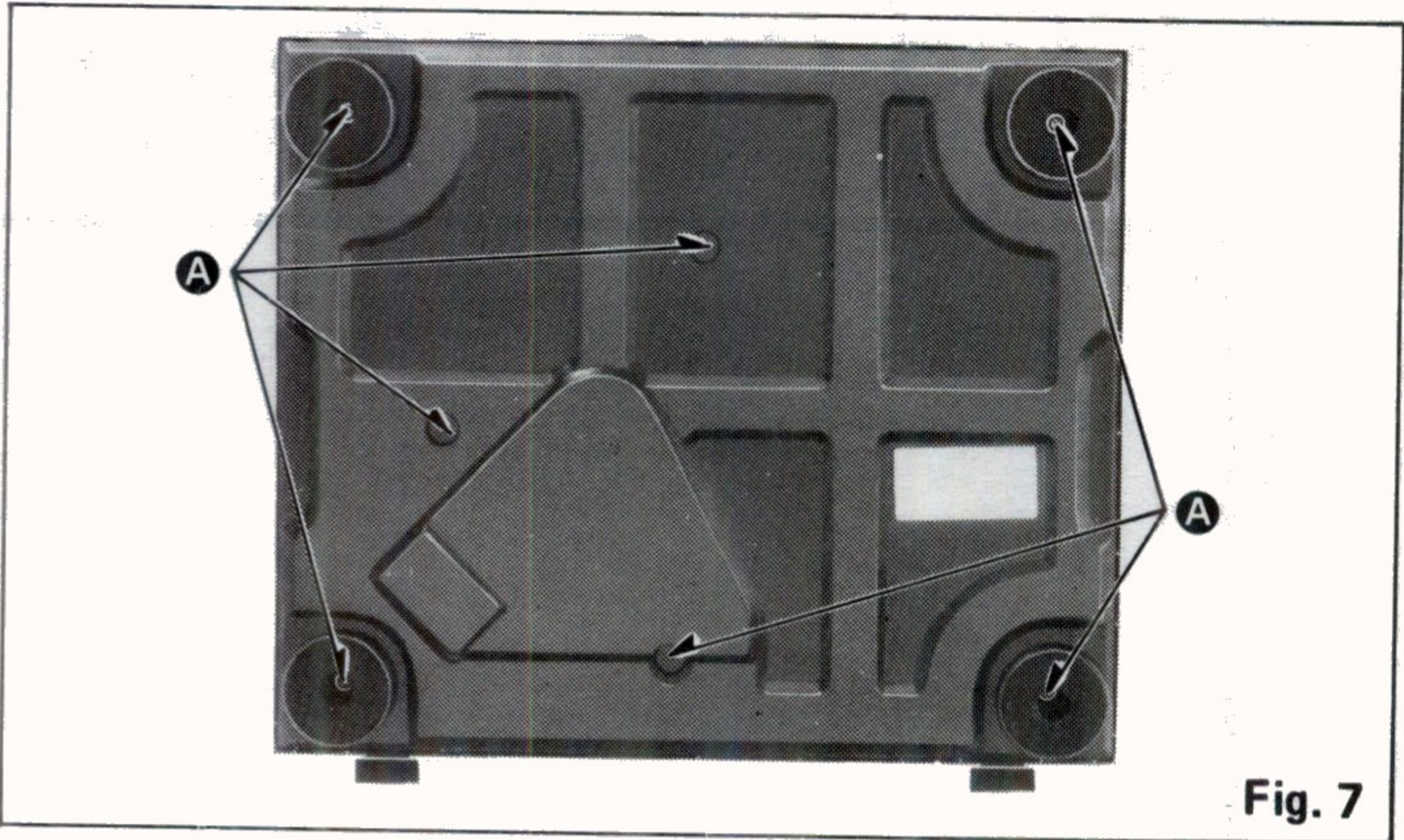


Fig. 7

Removal of stator coil (Fig. 8)

- 1) Remove the 3 setscrews of the stator cover of the removed drive P.C.B..
- 2) Disconnect the 18 soldered parts of the stator coil.
- 3) Remove the 3 setscrews **F** of the stator coil and P.C.B. board.

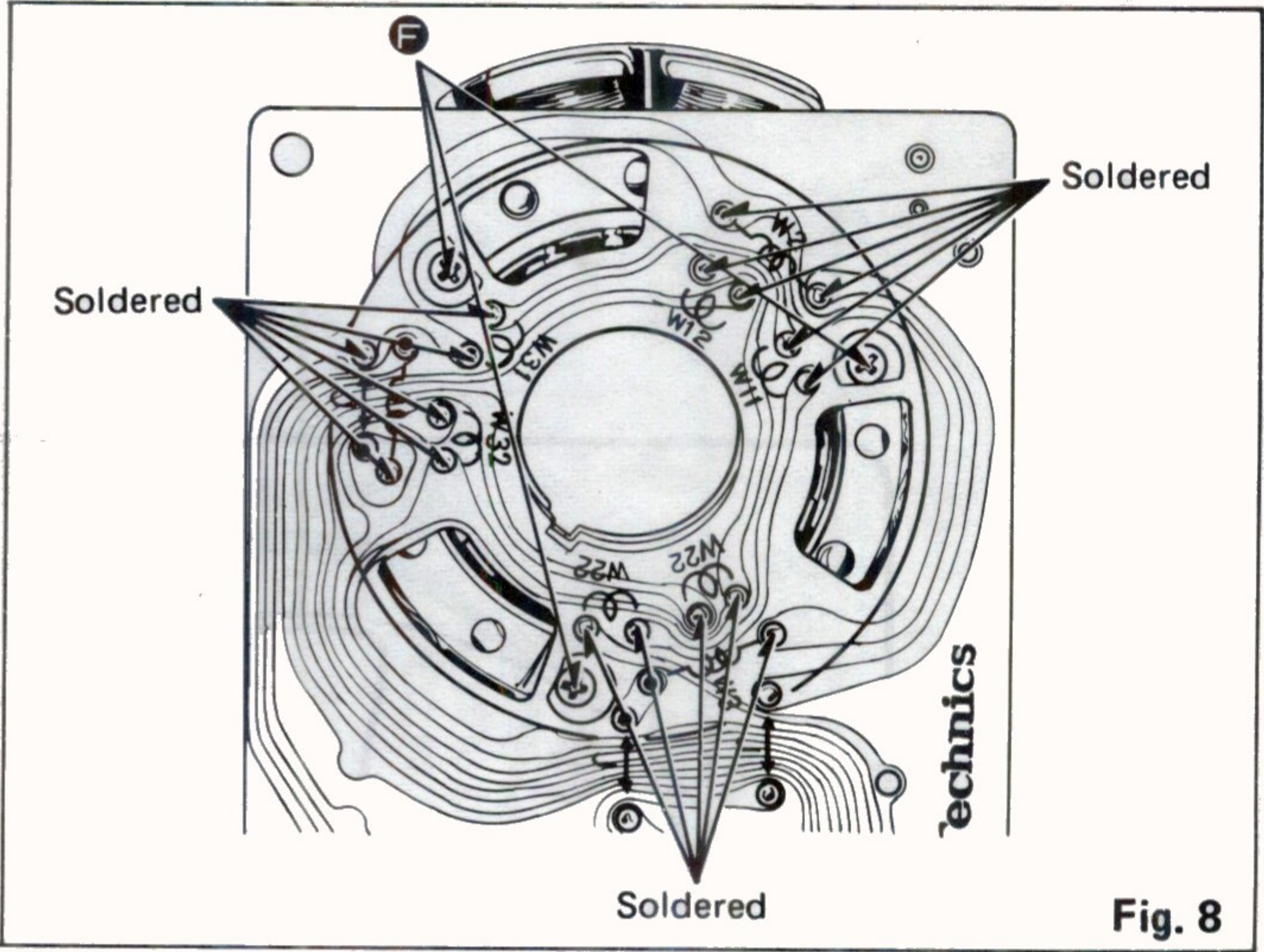


Fig. 8

■ REPLACEMENT PARTS LIST

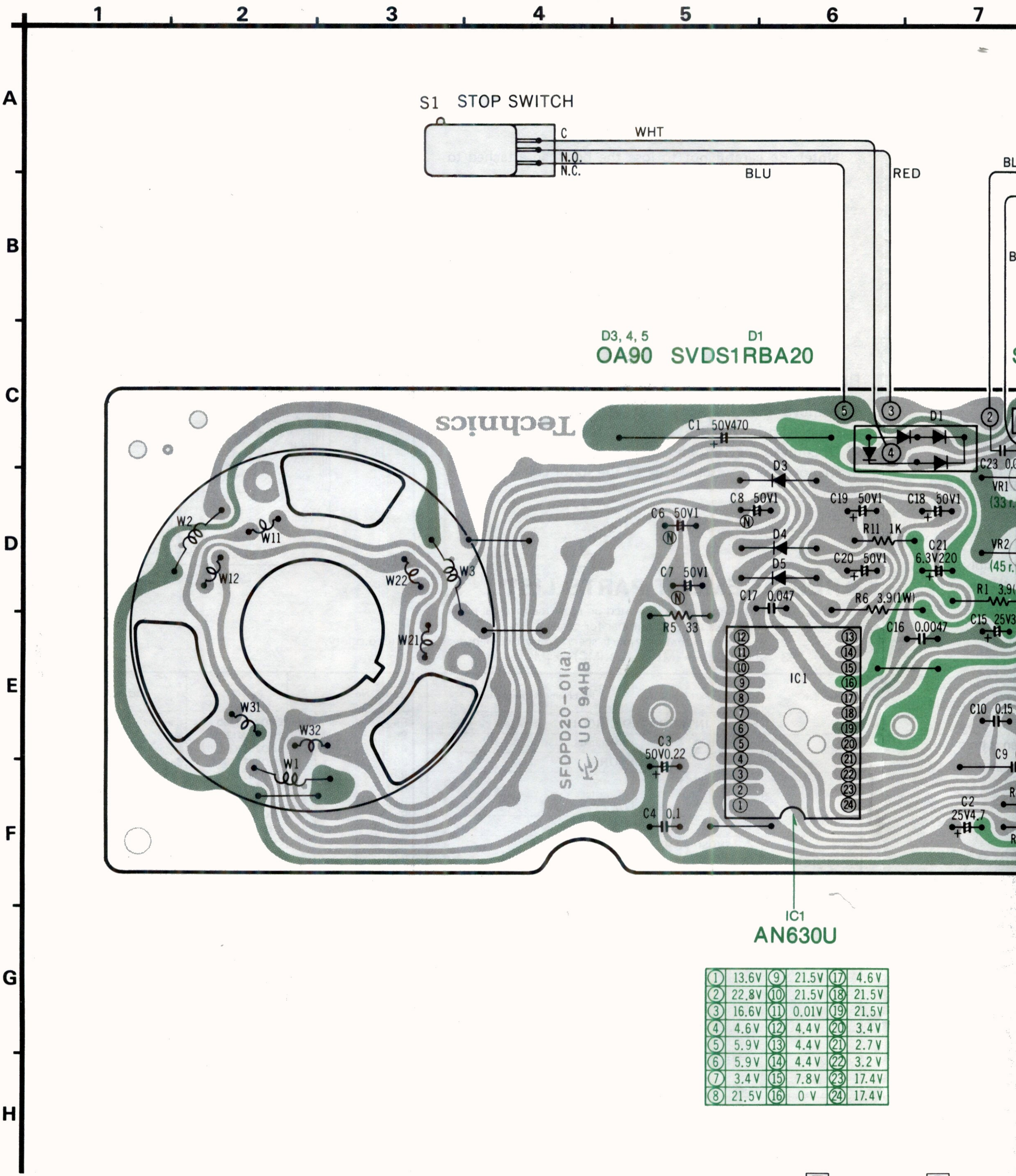
- Notes:**
1. Part numbers are indicated on most mechanical parts. Please use the part number for parts orders.
 2. **Δ** indicates that only parts specified by the manufacturer be used safety.
 3. SL-D1 (M) → [M] , SL-D1 (MC) → [MC]

Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUIT			
IC1		AN630U	Integrated Circuit
TRANSISTORS			
Q1		2SC1846-R	Transistor
Q2		2SD637	Transistor
Q3		2SB641	Transistor
DIODES			
D1	Δ	SVDSIRBA40	Rectifier
D2	Δ	SVDMI152	Rectifier
D3, 4, 5		20A90	Diode
D6		MA161	Diode
D7, 9		SVDGD4205ALC	Light Emitting Diode
TRANSFORMER			
T1	Δ	SLT41PU1D	Power Transformer
FUSE			
F1 [MC] only	Δ	XBA2F05NU100	500mA, Fuse
SWITCHES			
S1	Δ	ESB6237	Switch, Power
S2		EVAH27SBCAAY	Switch, Speed Selector
VARIABLE RESISTORS			
VR1, 2		EVLS6AA00B54	50kΩ (B), Speed Control (33 r.p.m. & 45 r.p.m.)
VR3		EVJ61AT12B24	20kΩ (B), Pitch Control
RESISTORS			
R1		ERX1ANJ3R9	Metallic, 3.9Ω, 1W, ± 5%
R2		ERD25FJ822	Carbon, 8.2kΩ, 1/4W, ± 5%
R3, 4		ERD25FJ472	Carbon, 4.7kΩ, 1/4W, ± 5%

Ref. No.		Part No.	Part Name & Description
R5		ERD25FJ330	Carbon, 33Ω, 1/4W, ± 5%
R6		ERX1ANJ3R9	Metallic, 3.9kΩ, 1W, ± 5%
R7		ERO25CKF6202	Metal Film, 62kΩ, 1/4W, ± 1%
R8		ERD25TJ393	Carbon, 39kΩ, 1/4W, ± 5%
R9		ERD25TJ104	Carbon, 100kΩ, 1/4W, ± 5%
R10		ERD25TJ563	Carbon, 56kΩ, 1/4W, ± 5%
R11		ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%
R12		ERO25CKF3902	Metal Film, 39kΩ, 1/4W, ± 2%
R13		ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%
R14		ERD25FJ331	Carbon, 330Ω, 1/4W, ± 5%
R15		ERD25TJ223	Carbon, 22kΩ, 1/4W, ± 5%
CAPACITORS			
C1		ECEB1HS471	Electrolytic, 470μF, 50V
C2		ECEA25Z4R7	Electrolytic, 4.7μF, 25V
C3		ECEA50ZR22	Electrolytic, 0.22μF, 50V
C4		ECQM1H104KS	Polyester, 0.1μF, 50V, ±10%
C5		ECEA50ZR33	Electrolytic, 0.33μF, 50V
C6, 7		ECEA50N1	Non-polar Electrolytic, 1μF, 50V
C8		ECEA50N1	Non-polar Electrolytic, 1μF, 50V
C9		ECQF2334KZ	Polypropylene, 0.33μF, 200V, ±10%
C10		ECQM1H154KZ	Polyester, 0.15μF, 50V, ±10%
C11		ECQM1H104KS	Polyester, 0.1μF, 50V, ±10%
C12		ECEA25M10R	Electrolytic, 10μF, 25V
C13		ECEA50M2R2R	Electrolytic, 2.2μF, 50V
C14		ECEA50MR33R	Electrolytic, 0.33μF, 50V
C15		ECEA1VS330	Electrolytic, 33μF, 25V
C16		ECQM1H472KZ	Polyester, 0.0047μF, 50V, ±10%
C17		ECQM1H473KZ	Polyester, 0.0047μF, 50V, ±10%
C18, 19		ECEA50Z1	Electrolytic, 1μF, 50V
C20		ECEA50Z1	Electrolytic, 1μF, 50V
C21		ECEA1AS221	Electrolytic, 220μF, 6.3V
C23		ECQM1H333KZ	Polyester, 0.0033μF, 50V, ±10%

Printed Circuit Board

Earth (Ground) Lines
B Lines



7

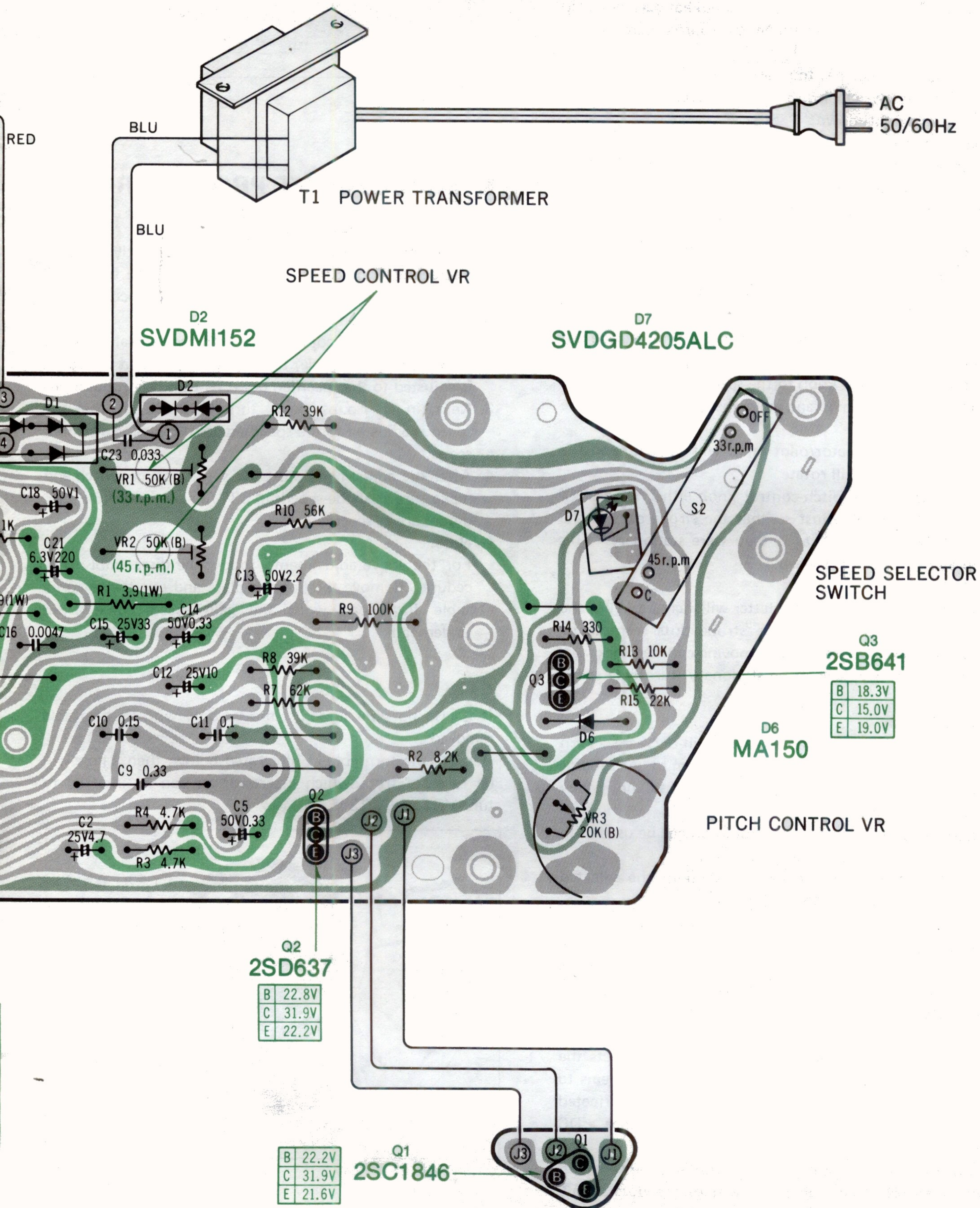
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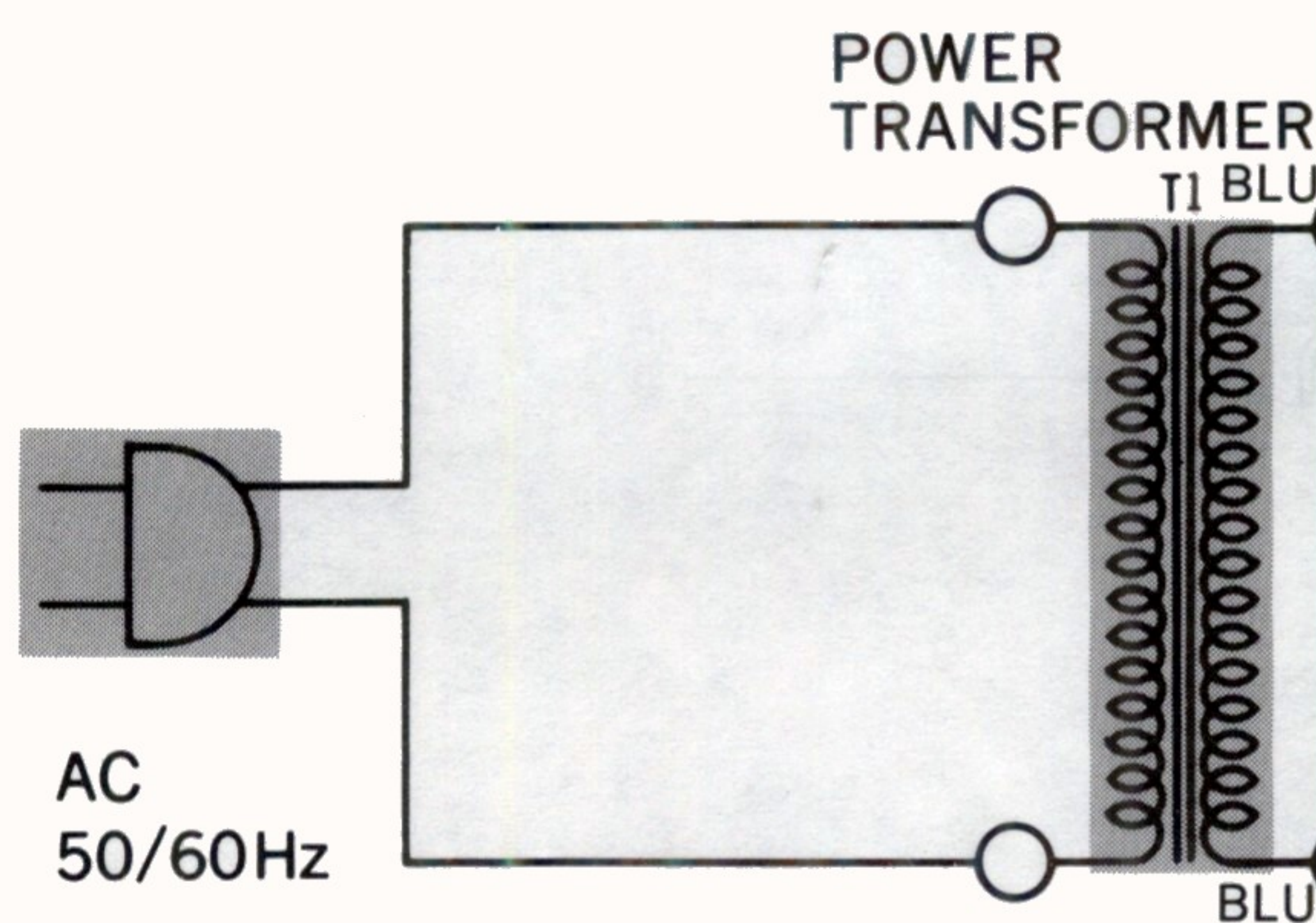
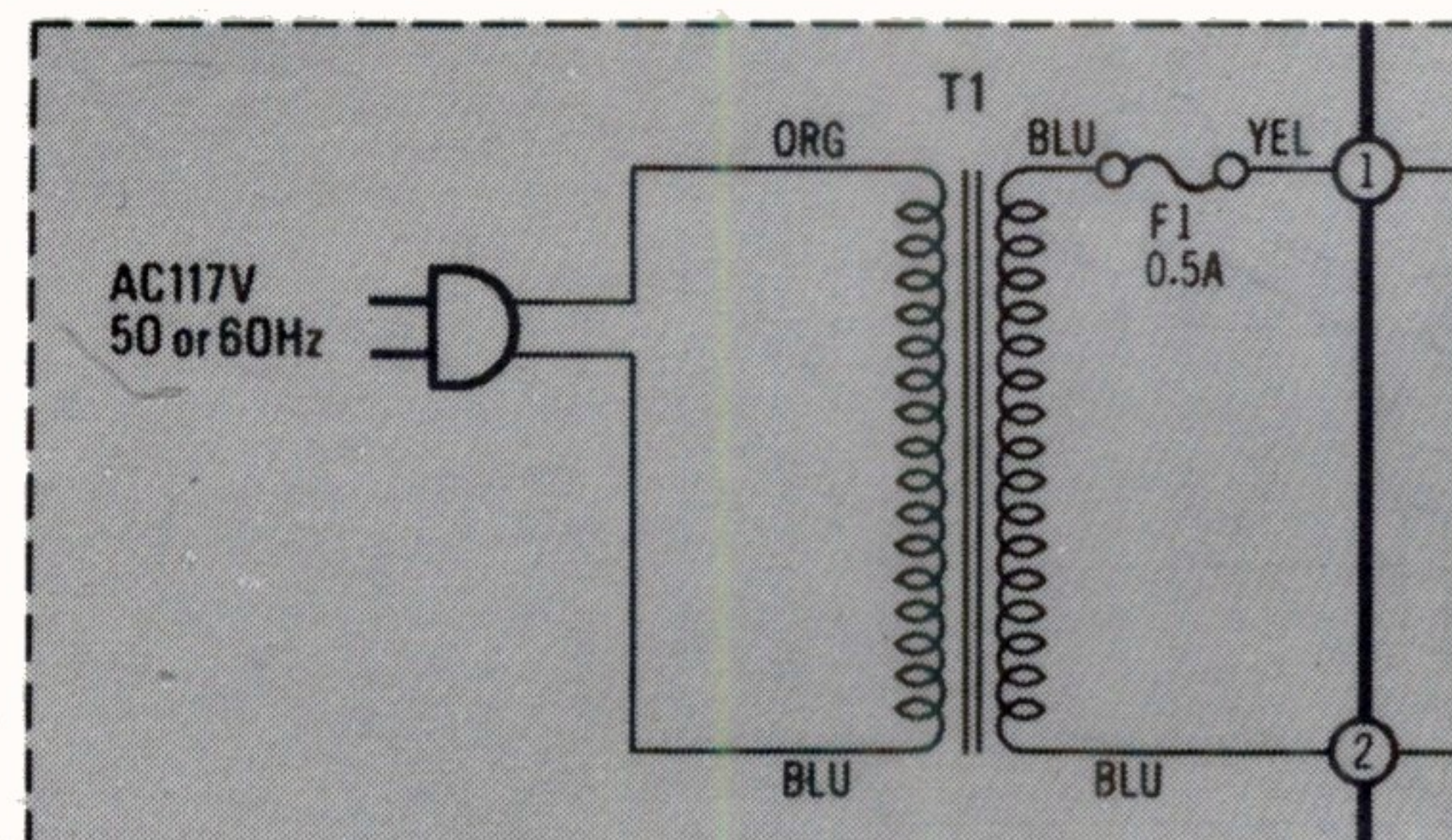
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Schematic Diagram

(This schematic diagram may be at any time with the development of new technology)

Power source only set for Canada [MC]



D2
SVDMI152
D7
SVDGD4205ALC

Notes:

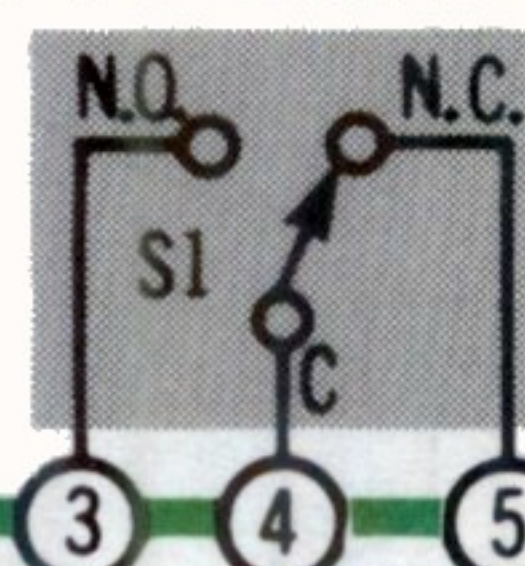
1. S1: Power switch (Arm switch) in "OFF" position.
2. S2: Speed selector switch in "33-1/3 r.p.m." position.
3. The voltage and wave form are the results of measurement by using DC voltmeter and oscilloscope on the basis of the chassis.

□ Voltage measured by DC voltmeter in 33-1/3 r.p.m. mode.
(S1 - N.O., S2 - 33)

Wave form Wave form measured by oscilloscope in 33-1/3 r.p.m. mode.
(S1 - N.O., S2 - 33)

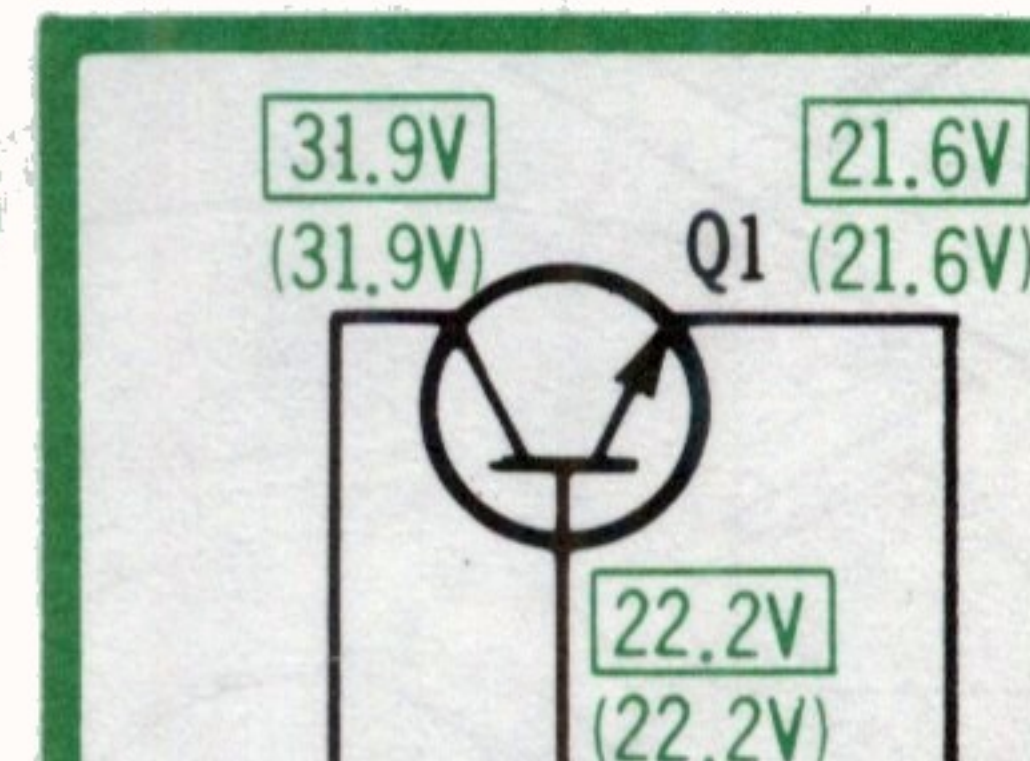
() Voltage measured by DC voltmeter in stop mode.
(S1 - N.O., S2 - OFF)

STOP SWITCH



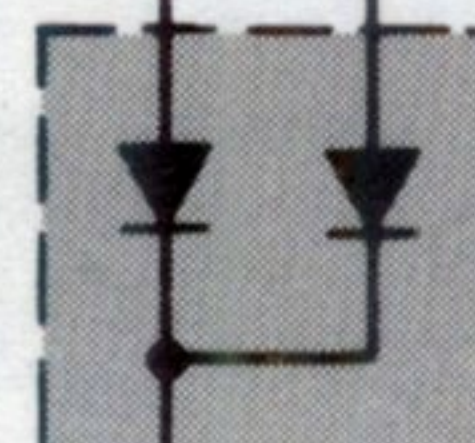
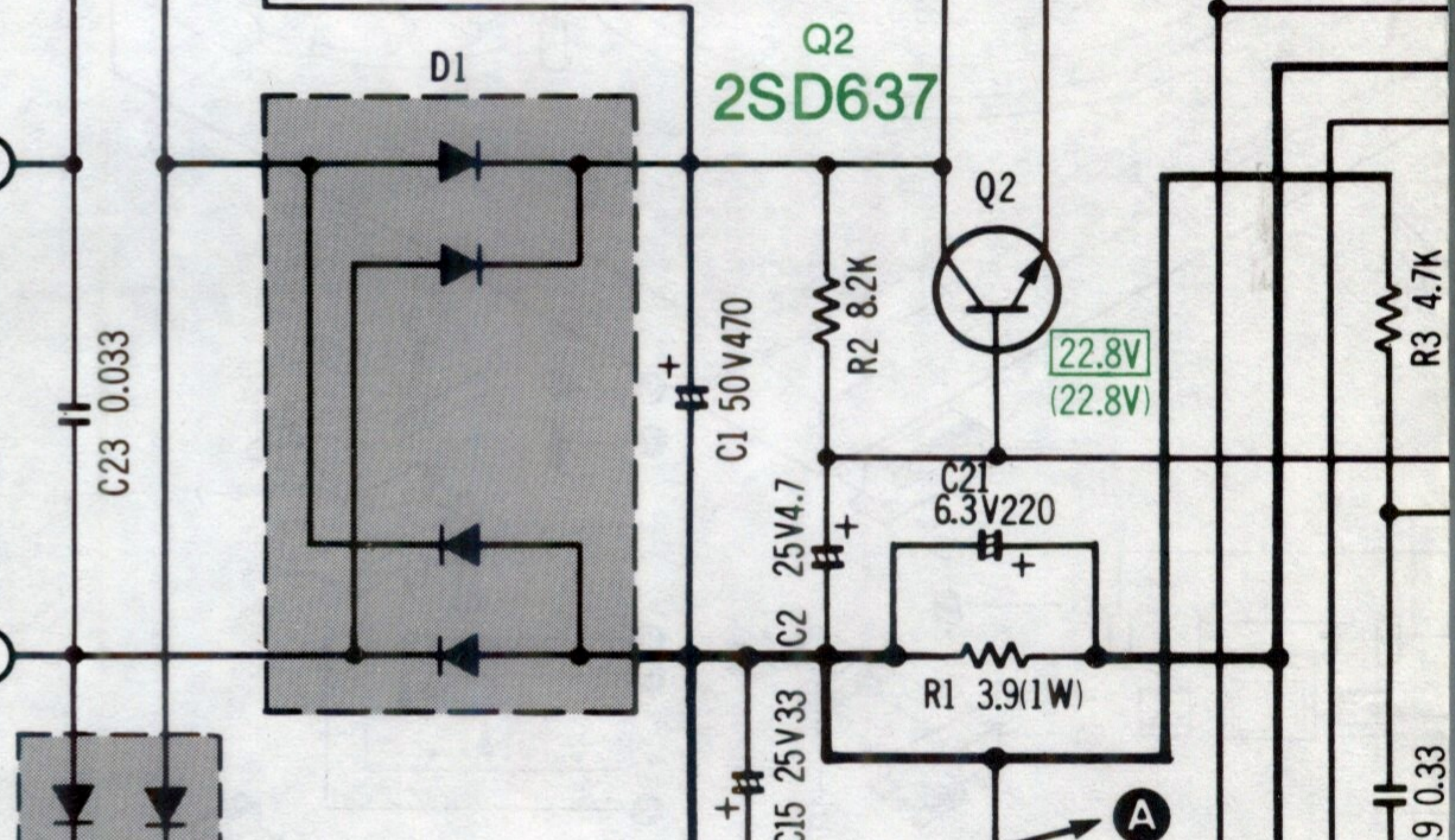
D1
SVDS1RBA20

Q1
2SC1846

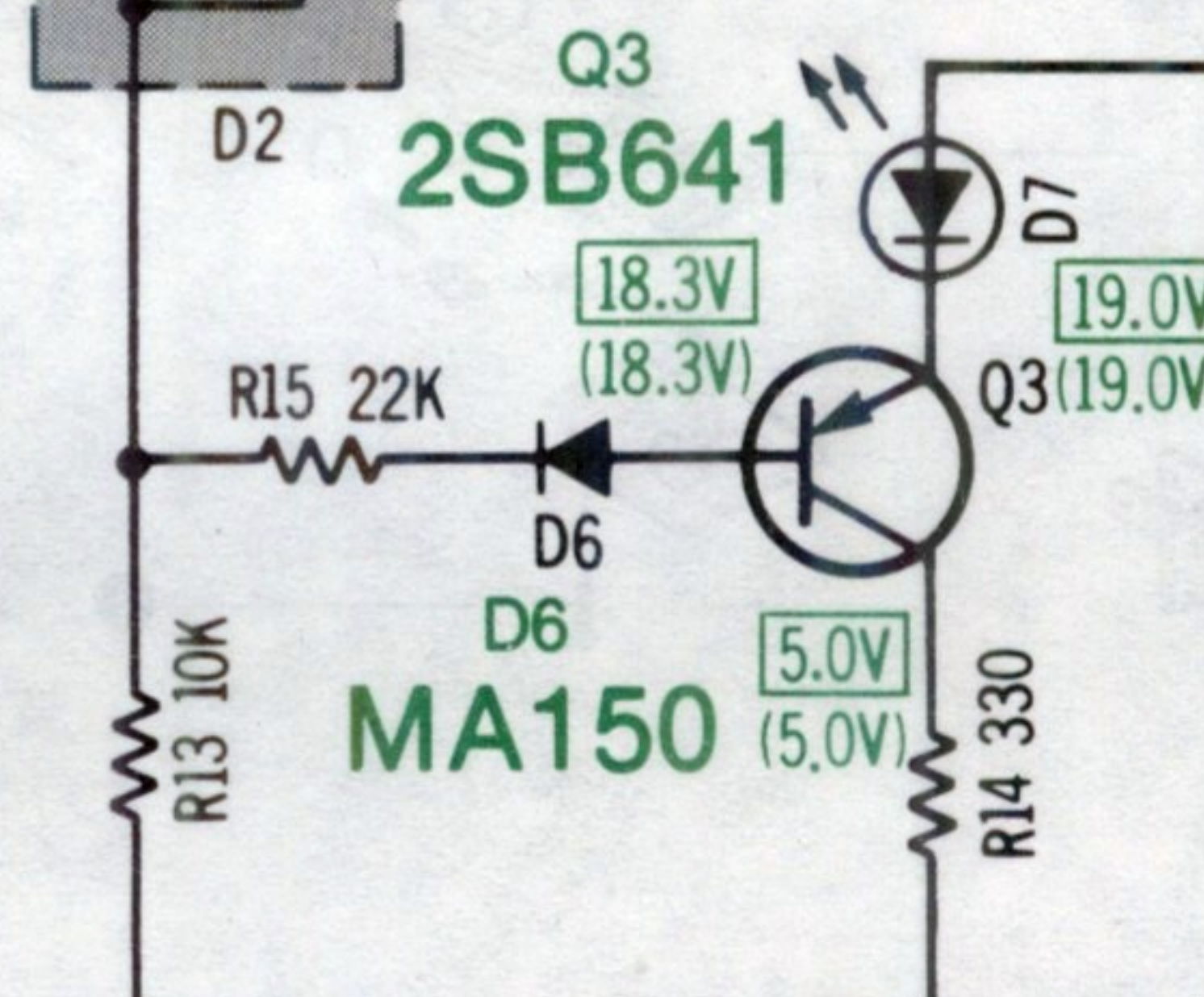


SFDPD20-01(b)

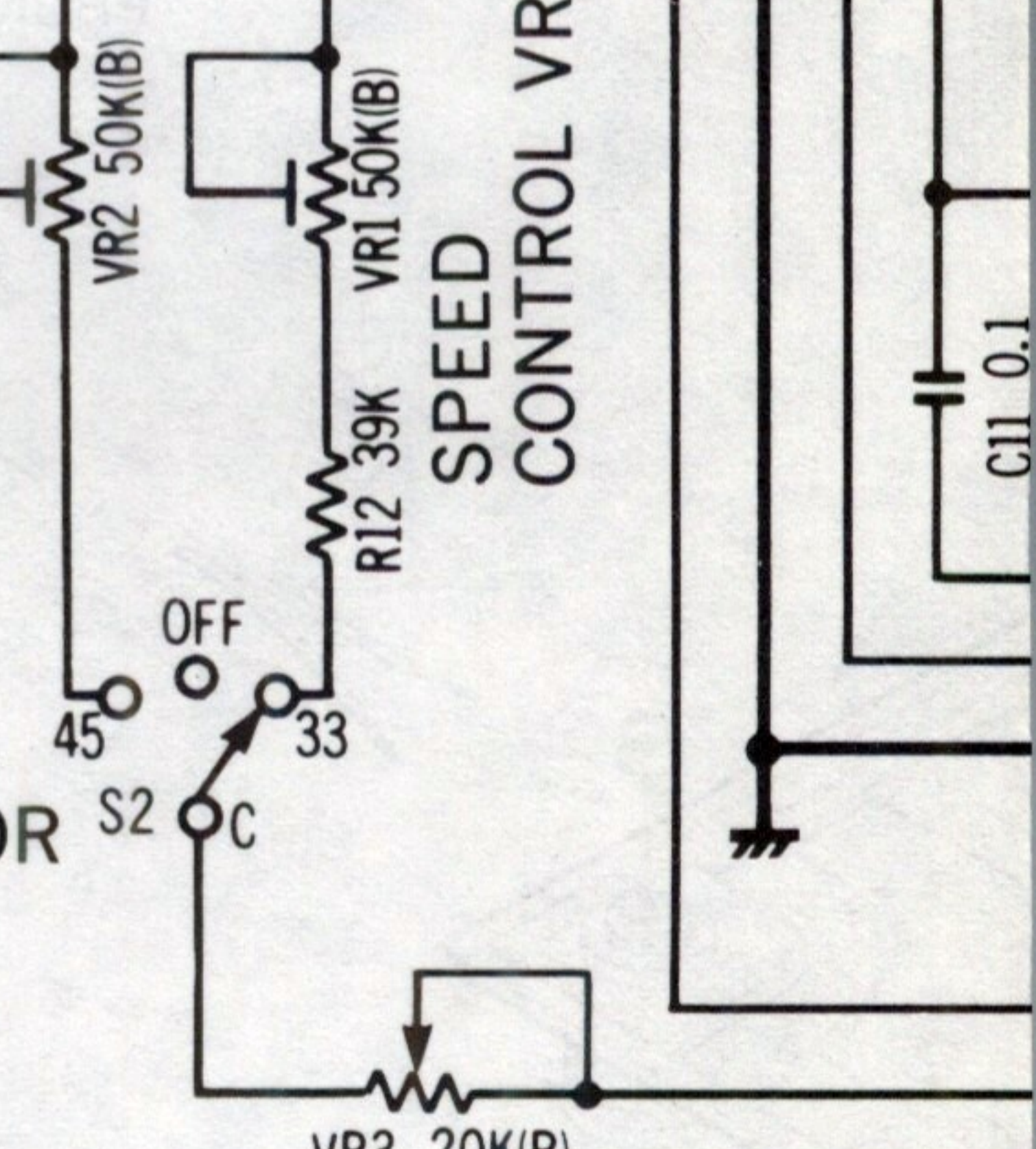
D1
2SD637



Q3
2SB641



SPEED SELECTOR SWITCH

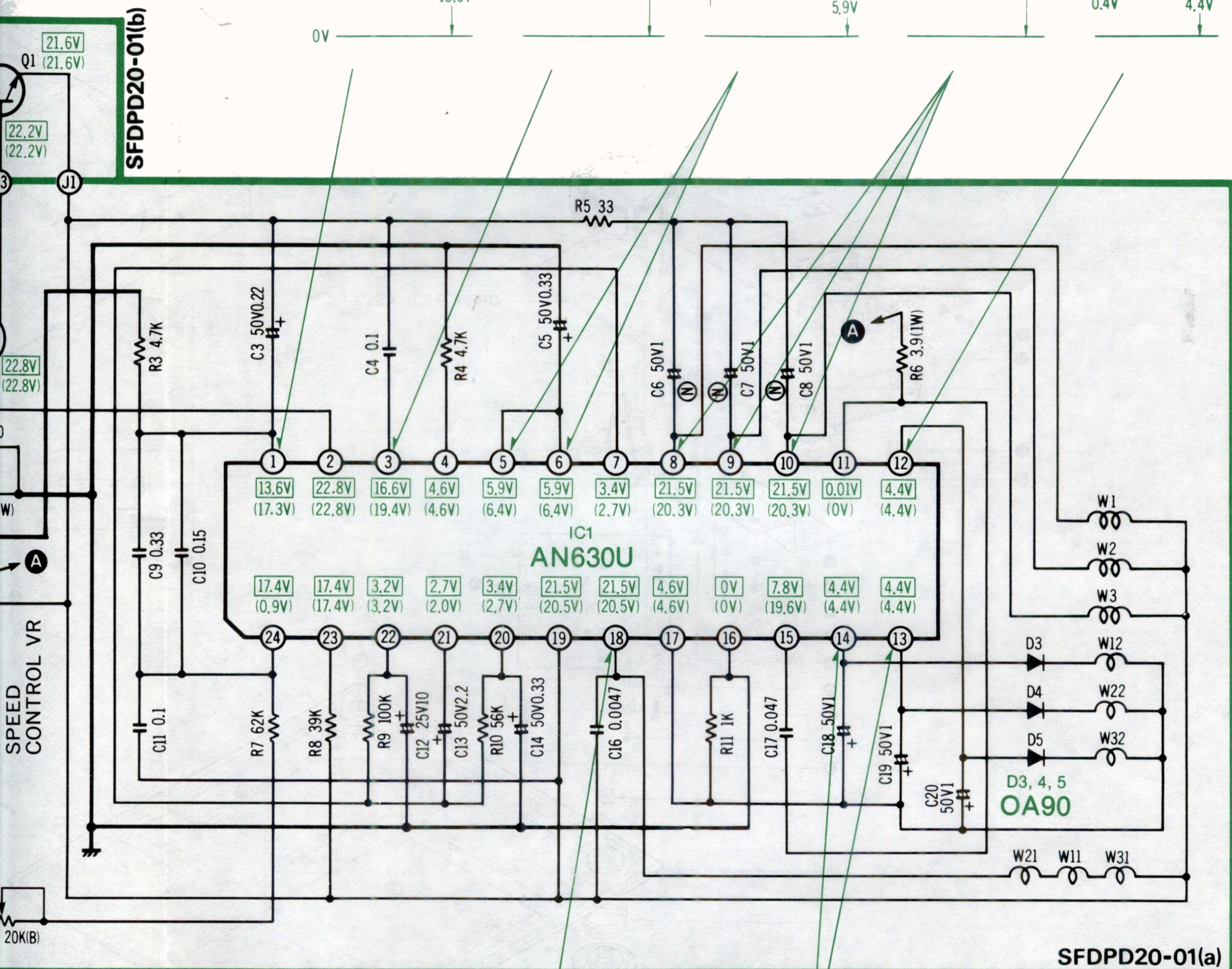
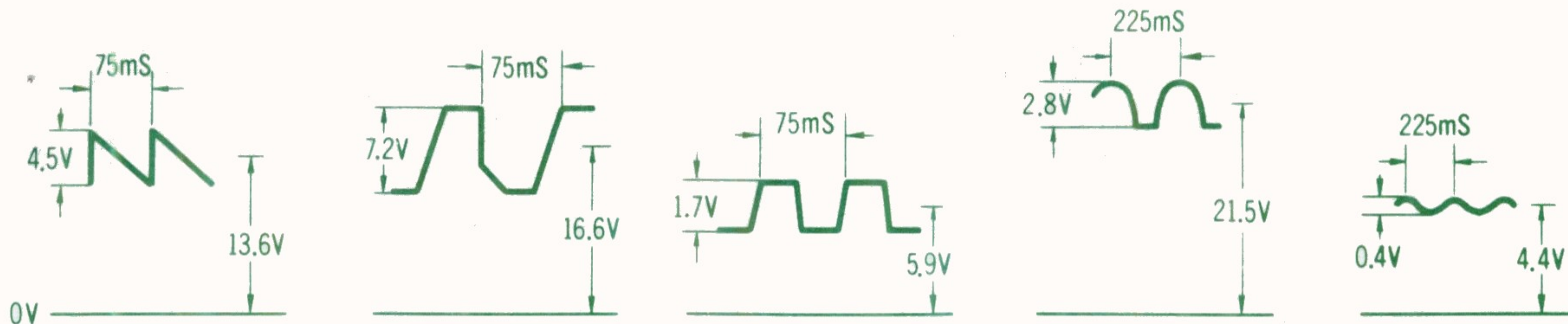


■ TERMINAL GUIDE
TRANSISTOR AND

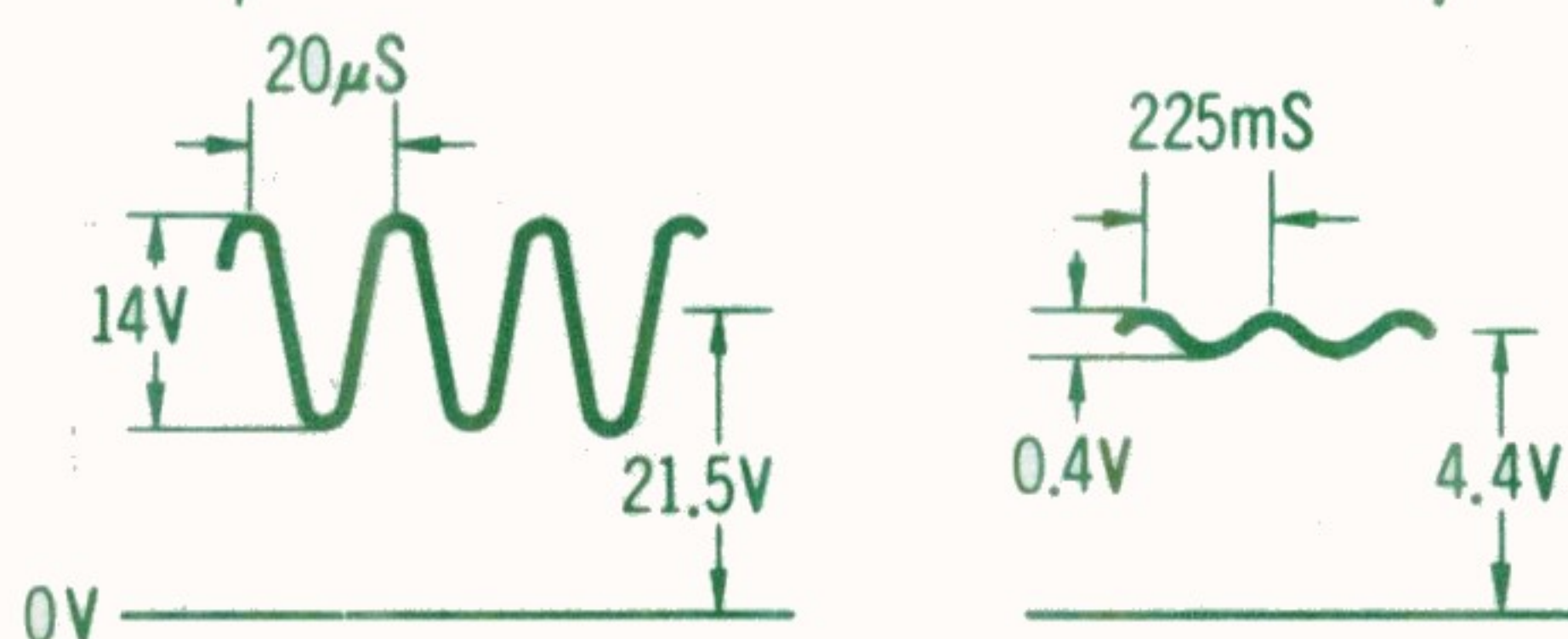
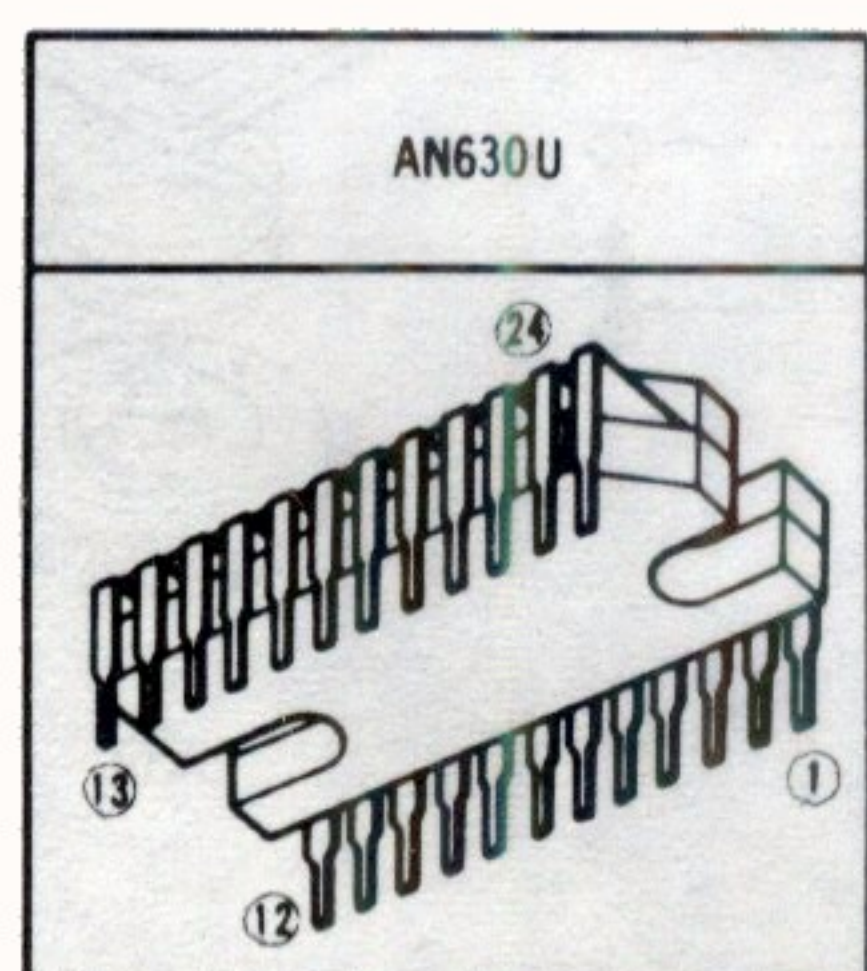
IMPORTANT SAFETY NOTICE

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

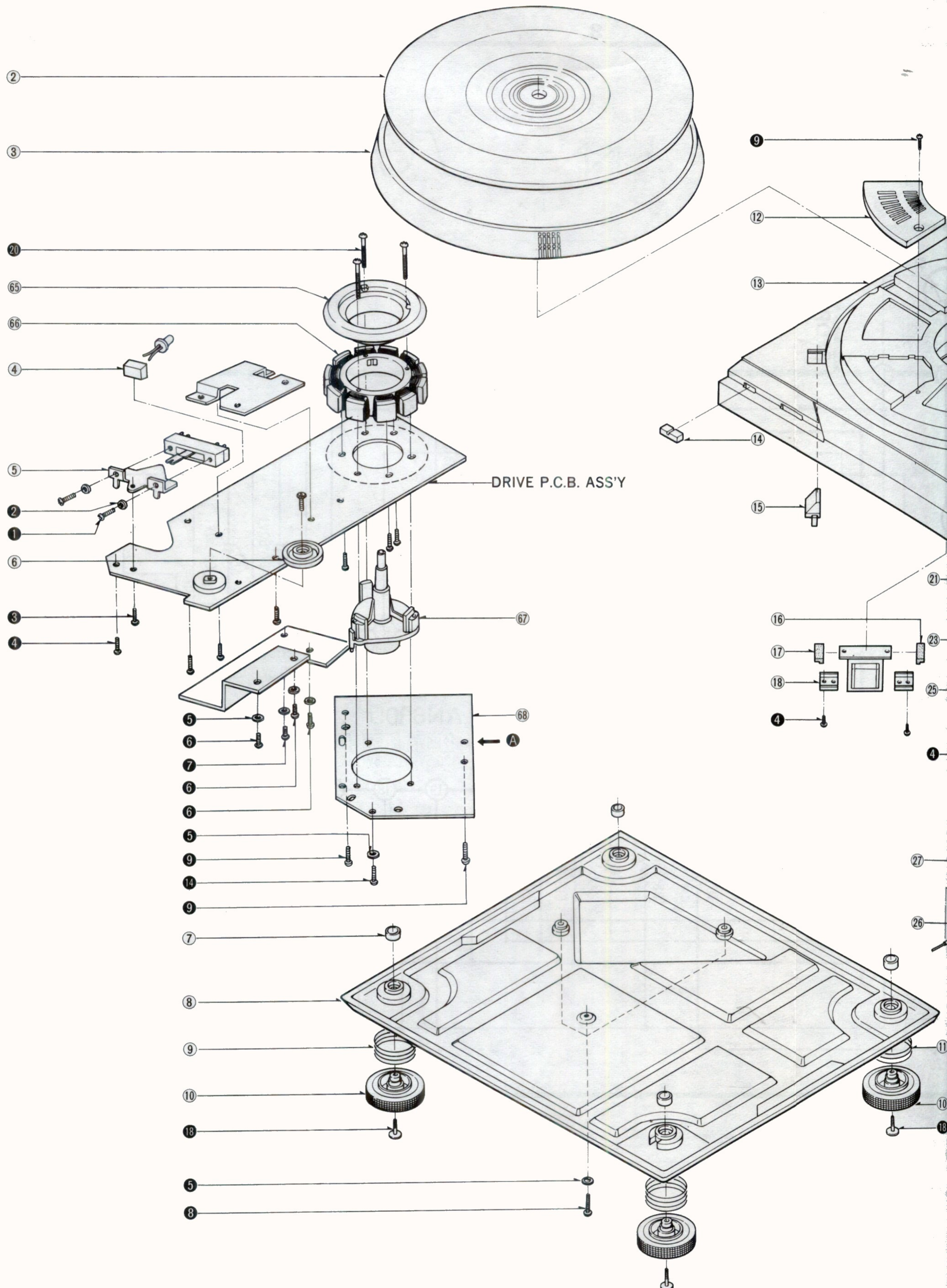
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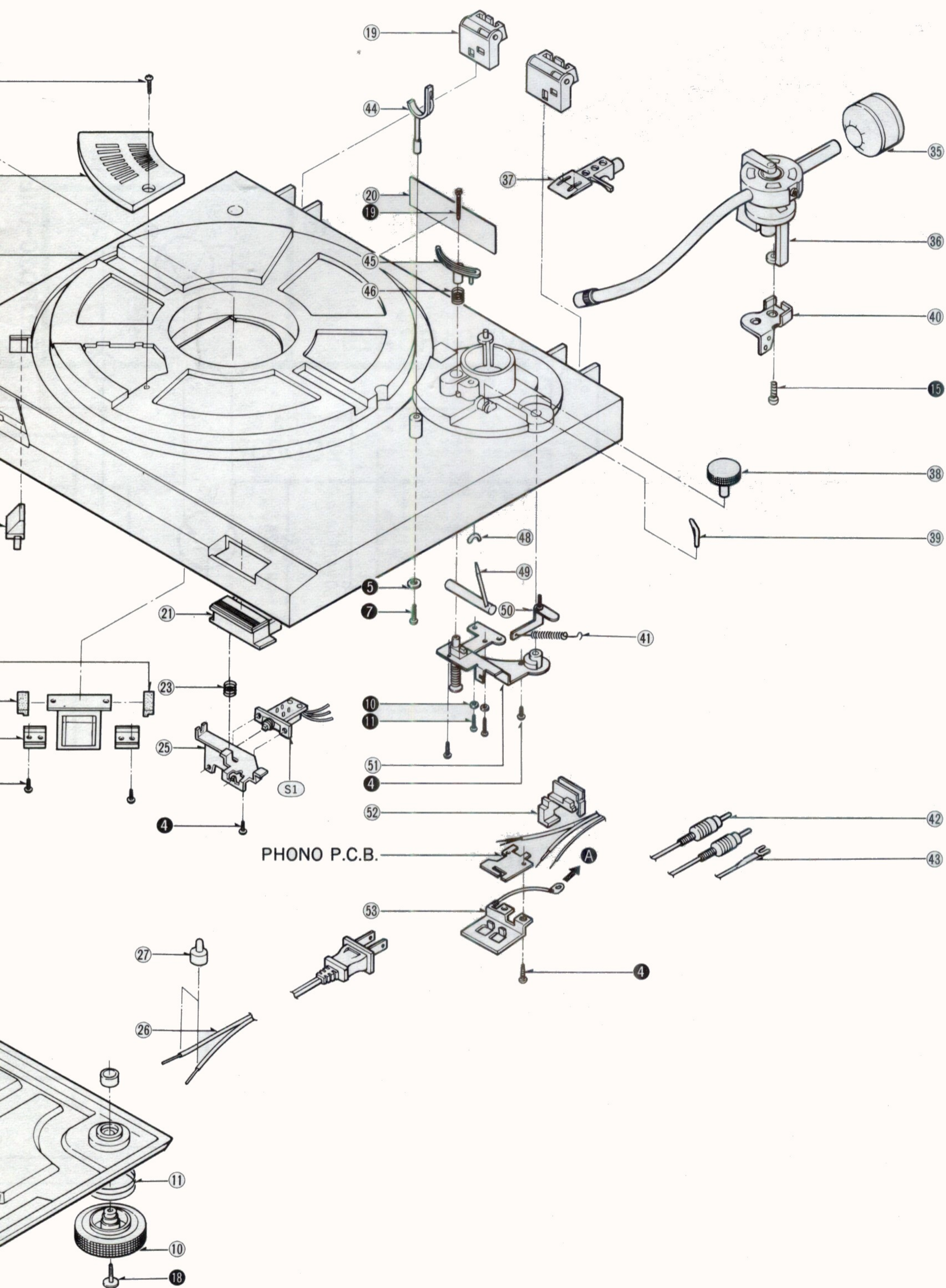


MINAL GUIDE OF NSISTOR AND IC



■ EXPLODED VIEWS





■ REPLACEMENT PARTS LIST

- Notes:** 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.
2. Δ indicates that only parts specified by the manufacturer be used safety.
3. SL-D1 (M)→ [M] , SL-D1 (MC)→ [MC]

Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS		
1	SFADD20-01E	Dust Cover
2	SFTG320-01	Turntable Mat
3	SFTED20-01A	Turntable
4	SFUMD20-02	Spacer, LED
5	SFUPD20-04	Plat, Speed Select Switch
6	SFKTD20-03	Knob, Pitch Control
7	SFXWD20-01	Cap, Bottom Board
8	SFAUQ20-01	Bottom Board
9	SFQC200-02	Spring, Audio Insulator (Front)
10	SFGAQ20-01E	Audio Insulator
11	SFQC320-01	Spring, Audio Insulator (Rear)
12	SFKCD20-01	Panel, Cabinet
13	SFACD10-01	Cabinet
14	SFKTD20-02	Knob, Speed Select
15	SFUMQ20-05	Cover, Neon
16	SFGCD20-01	Cushion, Power Transformer
17	SFGCD20-02	Cushion, Power Transformer
18	SFUPD20-02	Supporter, Power Transformer
19	SFAT301-01A	Hinge Ass'y
20 [M]	SFNND10M01	Name Plate
20 [MC]	SFNND10C01	Name Plate
21	SFKTD10-01E	Knob, Stop
23	SFQAD20-01	Spring, Stop SW
25	SFUPD10-02	Supporter, Stop SW
26	Δ QFC1201MA	AC Cord
27	SJE41	Spacer, AC Cord
tone ARM and ARM BASE		
35	SFPWG31101K	Balance Weight
36	SFPAM31101K	Tone Arm
37	SFPCC31001K	Headshell
38	SFPJK13101	Knob, Anti-skate Force Control
39	SFPAB13202	Knob, Cueing Lever
40	SFUPD10-01	Bracket, Anti-skate Force Control
41	SFPSP00101	Spring, Anti-skate Force Control
42	SFDH212-01	Phono Cord
43	SFEL028-01E	Ground Wire
44	SFKU212-01E	Arm Rest
45	SFPRT13004K	Lift Ass'y
46	SFQA829-03	Spring, Lift Ass'y
48	SFGZD20-02	Supporter, Cueing
49	SFPJL00101K	Lever, Cueing
50	SFXJQ20-03E	Plate, Anti-skate Force Control
51	SFUPD20-01A	Bracket, Lift Ass'y
52	SFUM212-08	Clamper, Cord
53	SFUP212-12	Plate, Shield

Ref. No.	Part No.	Part Name & Description
AUTOMATIC MECHANISM ASS'Y		
65	SFMGQ20-01	Cover, Stater Frame Ass'y
66	SFMG170-01A	Stater Frame
67	SFMZQ20-01A	Shaft, Stater Frame Ass'y
68	SFUKD10-01	Plate, Motor Shaft
SCREWS, WASHERS and CIRCLIPS		
①	XSN2+4	Screw
②	XWA2B	Washer
③	XTN3+5B	Screw
④	XTV3+10B	Screw
⑤	XWG3	Washer
⑥	XTV3+8B	Screw
⑦	XTV3+14B	Screw
⑧	XTV3+20B	Screw
⑨	XTV3+10BFZ	Screw
⑩	XWA3B	Washer
⑪	XSN3+12S	Screw
⑫	XTN3+8B	Screw
⑬	XTN26+6B	Screw
⑭	XTN3+16B	Screw
⑮	SFPEV13204	Screw
⑯	SFXGD20-01	Screw
⑰	SFXG829-01	Screw
⑱	SFXGQ20-02	Screw
⑲		
⑳		
ACCESSORIES		
A1 [M]	SFNUD10M01	Instruction Book
A1 [MC]	SFNUD10C01	Instruction Book
A2	SFWE212-01	Adaptor, 45 r.p.m.
A3	SFPEN3302	Nut, Cartridge
A4	SFPEW9601	Washer, Head Shell
A5	SFCZV8801	Screw, Cartridge
A6	SFPEV9801	Screw, Cartridge
A7	SFYF05A06	Polyethylene Bag
A8	SFK0135-01	Overhang Gauge
A9	SFPZB3501	Shell Weight
PACKING PARTS		
P1 [M]	SFHPD10M01	Carton
P1 [MC]	SFHPD10C01	Carton
P2	SFHHD20-01	Pad, Front
P3	SFHHD20-02	Pad, Rear
P4	SFHD230-01	Pad, Top
P5	SFHDD20-02	Pad, Turntable
P6	SFYH60X60	Polyethylene Cover, Player Unite
P7	SFYH60X60	Polyethylene Cover, Dust Cover
P8	SFYH40X45	Polyethylene Cover, Turntable

— NOTE —

Lined area for notes, consisting of 20 horizontal lines.