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THE VINYL ENGINE®

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Service Manual

Player
SL-1500



SPECIFICATIONS

(TURNTABLE SECTION)

Type	Manual Player system
Drive method	Direct drive
Motor	Ultra-low-speed brushless DC motor
Turntable platter	Aluminum die-cast, 33 cm (13") diameter
Turntable speeds	33-1/3 and 45 r.p.m.
Speed change method	Electronic
Variable pitch controls	Individual control knobs, 10% adjustment range
Wow and flutter	0.03% (W.R.M.S.)
Rumble	-50 dB (DIN-A), -70 dB (DIN-B)

(GENERAL)

Power supply	~120 V, 50 or 60 Hz
Power consumption	5 W
Dimensions	45.3 × 36.6 × 13.9 cm (W × D × H) (17-3/4 × 14-3/8 × 5-1/2 inches)
Weight	7.8 kg (17.2 lb)

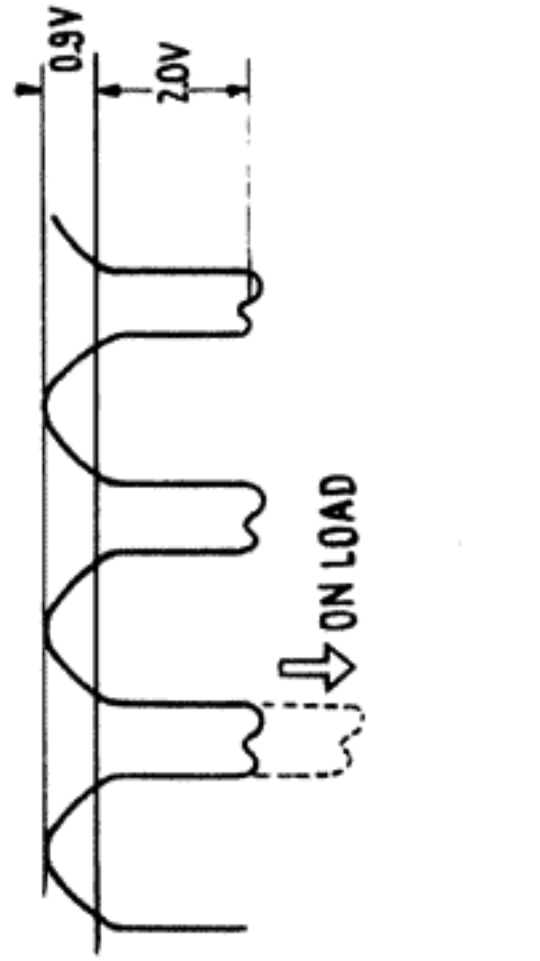
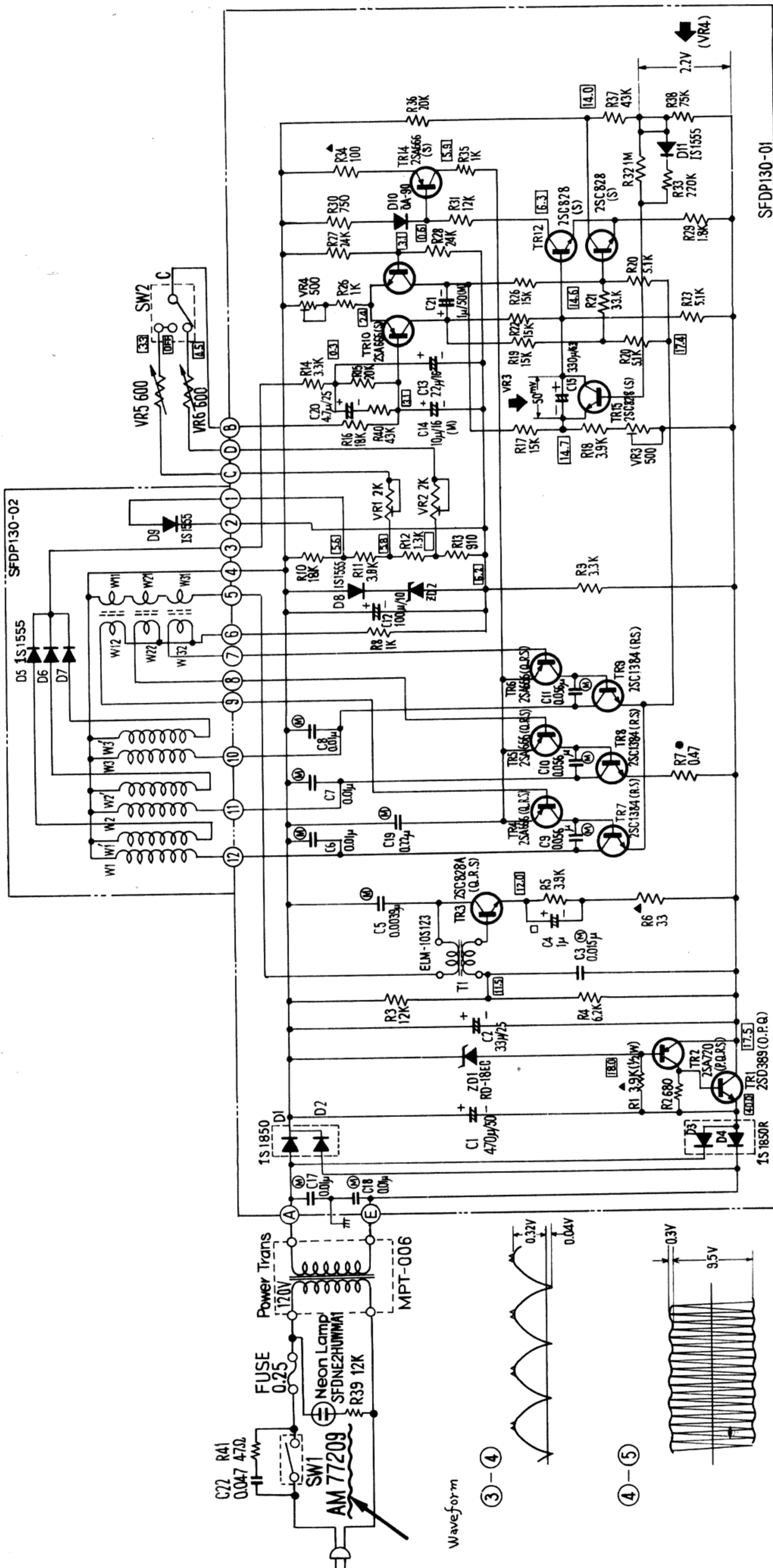
(TONEARM SECTION)

Type	Universal "S" shaped tubular arm, static-balanced type, direct reading stylus pressure adjustment, with anti-skating force control device, and cueing device
Effective length	230 mm (9-1/16")
Overhang	15 mm (19/32")
Tracking error angle	Within +3° (at the point 150 mm (5-1/8") from the center) +1° (at the point 55 mm (2-3/16") from the center)
Offset angle	21.5°
Adjustable stylus pressure	0 to 3 g
Cartridge weight range	5 to 11 g
Head shell weight	9.5 g

(Specifications, design and other details are subject to change, without prior notice, at any time in order to improve performance)

Technics
by Panasonic

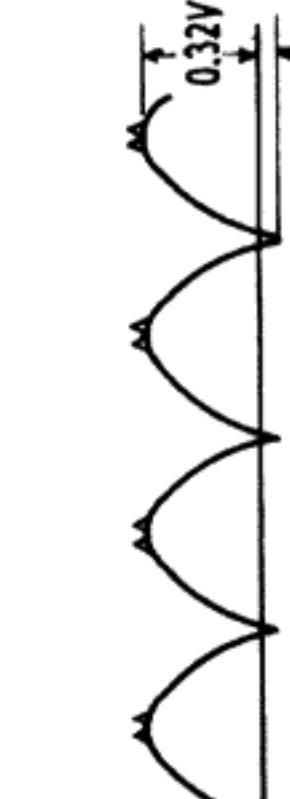
SCHEMATIC DIAGRAM SL-1500



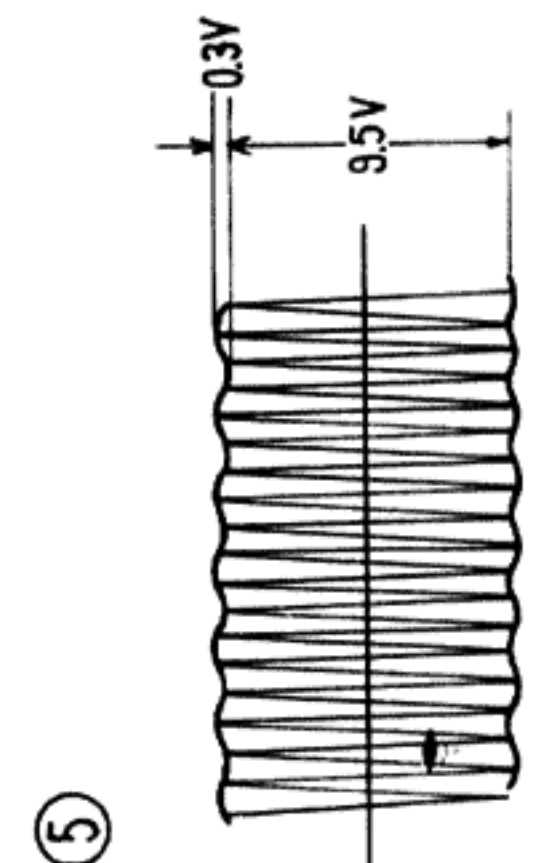
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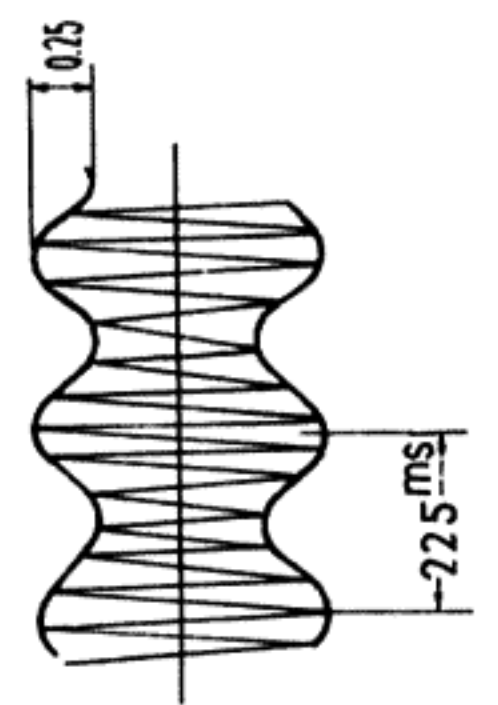
Waveform



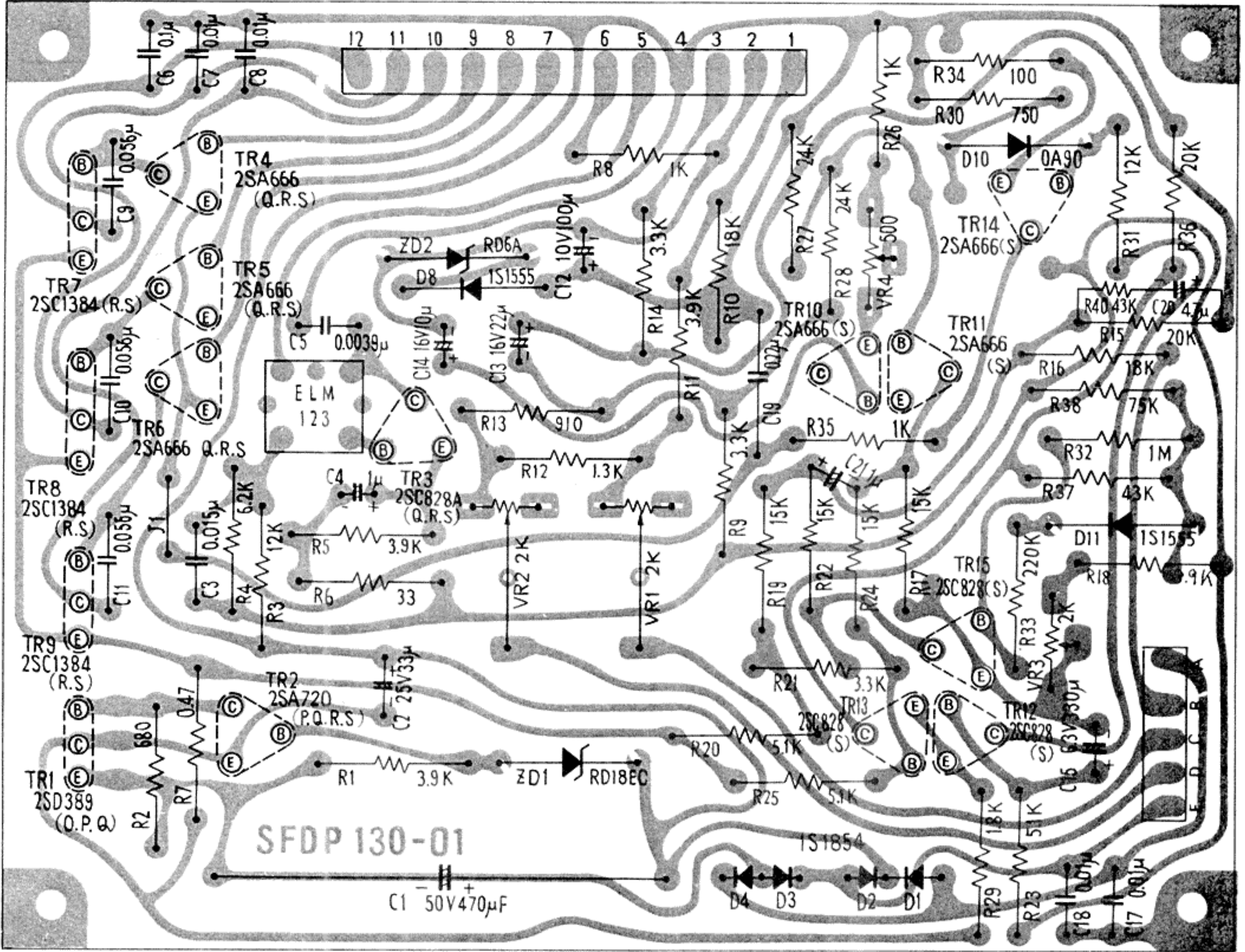
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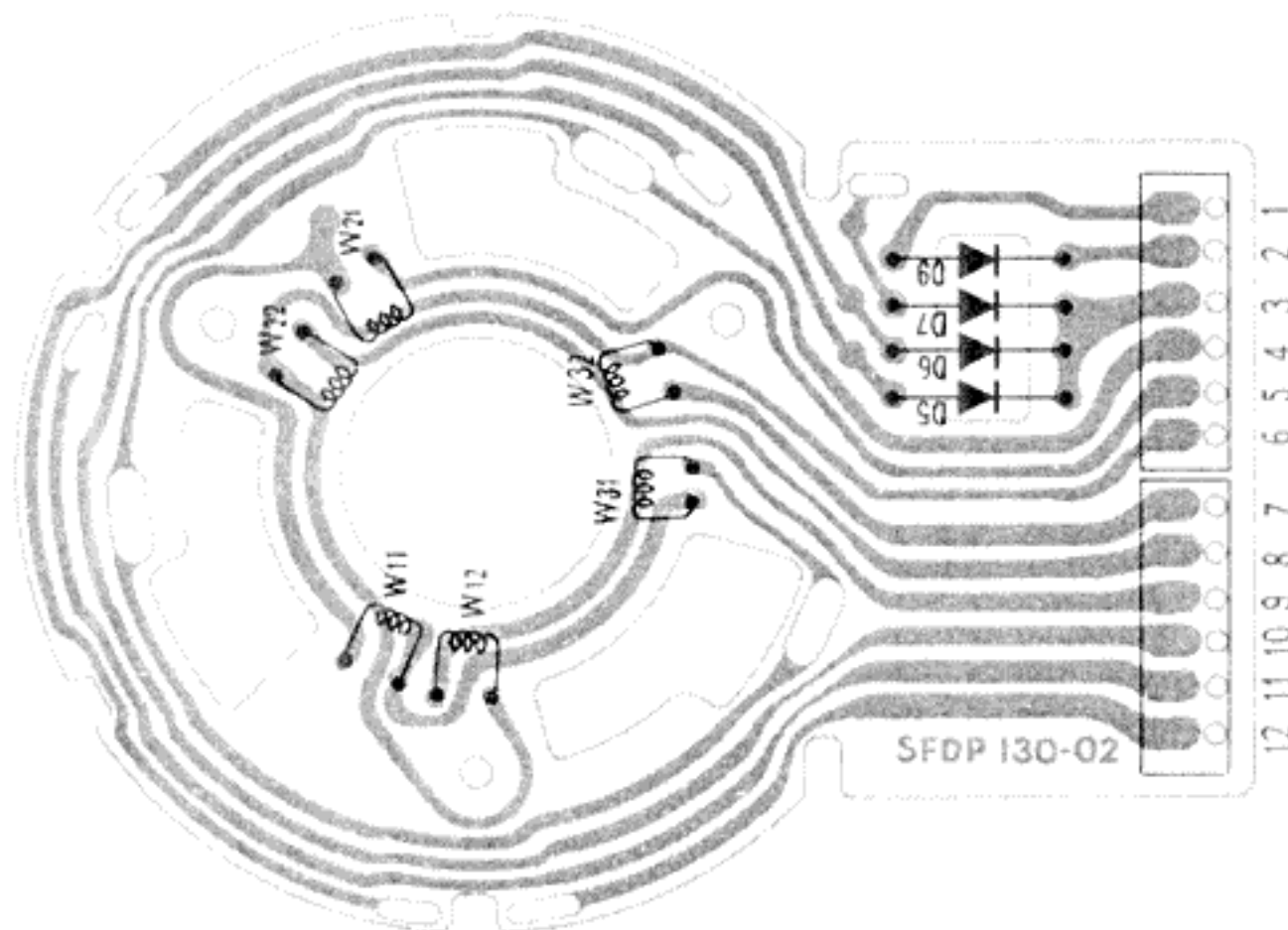
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CIRCUIT BOARD



Circuit Plate



Motor

TROUBLE SHOOTING GUIDE

* Except when checking voltage, disconnect the power cord before repair without fail.

TROUBLE	CAUSE	REMEDY
Turntable Speed A. Switching on does not cause turntable to rotate.	Remove back cover and, using DC voltmeter, check printed base voltage: 1. No output of constant-voltage circuit (between Tr1 collector and 4) is found. (1) No output on secondary of transformer. * Cord disconnected. * Soldered improperly. Fuse disconnected. * Power transformer defective. (2) Output found on secondary of transformer. * Constant-voltage circuit parts (ZD1, Tr1, Tr2) defective. 2. Output of constant-voltage circuit is 17~20V. * 3-phase switching circuit (Tr4 ~ Tr9), oscillator circuit (Tr3) defective. Tr14 defective. 3. Power Switch is not ON. * Micro switch defective. 4. Speed selector switch defective. * Contact faulty * Soldered improperly.	* Replace cord. * Solder securely. * Replace fuse. * Replace power transformer. * Replace printed base assembly. * Replace printed base assembly. * Replace micro switch. * Replace speed selector switch. * Solder securely.
B. Turntable speed too fast.	1. Constant-voltage output is not 17~20V. * Constant-voltage circuit parts (ZD1, Tr1, Tr2) defective. 2. Constant-voltage output is 17V~20V. * Diodes D8, D9, ZD2 defective. * Diodes D5, D6, D7 shorted. * Speed maladjusted.	* Replace printed base assembly. * Replace printed base assembly. * Replace motor. (Stator frame Ass'y). * Adjust semi-fixed resistor VR1 & VR2.
C. Turntable speed too slow.	1. Constant-voltage output is not 17~20V. * Constant-voltage parts (ZD1, Tr1, Tr2, defective.) 2. Constant-voltage output is 17~20V. * Diodes D8, D9, ZD2 defective. * Speed unadjusted.	* Replace printed base assembly. * Replace printed base assembly. * Adjust semi-fixed resistor VR1 & VR2.
D. Turntable speed varies too much.	* Trouble in 3-phase switching circuit.	* Replace printed base assembly.
E. Turntable, after stopped by hand, will not turn or starts turning but will stop soon.	* 3-phase switching circuit defective.	* Replace printed base assembly.
F. Operative at only one of two speeds. (33-1/3 rpm, 45 rpm)	* Selector switch defective. * Lead disconnected or unsoldered. * Contact of Vr1, Vr2 insufficient.	* Replace selector switch. * Replace lead, or solder securely. * Replace printed base assembly.
G. When actuating, turntable speed is unsteady for along time.	* Semi-fixed resistor VR3 & VR4 unadjusted.	* Make it become 50mV at both ends of C15 with semi-fixed resistor VR3. * Make it become 2.2V at both ends of R38 with semi-fixed resistor VR4.
Noise Offensive noise is hears.	* Power transformer makes loud noise of vibration. * Broken part of rotor magnet or iron chips attracted by magnet and rubbed by motor case.	* Replace power transformer. * Remove iron chips.

ADJUSTMENT INSTRUCTION

① SPEED ADJUSTMENT (with pitch control knobs) (See Fig. 1)

*The speed is already adjusted accurately in the factory.

*If, for any reason, you wish to readjust the speed, turn these pitch control knobs to "+" direction or "-" direction.

"+" direction This increases the speed of the turntable platter.

Turn the knob to "+" direction if the strobo dots seem to be "falling back"; i.e., seem to be moving counterclockwise.

When the strobo dots appear to be stationary, the speed is accurate.

"-" direction This decreases the speed of the turntable platter.

Turn the knob to "-" direction if the strobo dots seem to be "running ahead"; i.e., seem to be moving clockwise, until they appear stationary.

*Each of the two turntable speeds (33-1/3 and 45 r.p.m.) can be adjusted within a range of 10%.

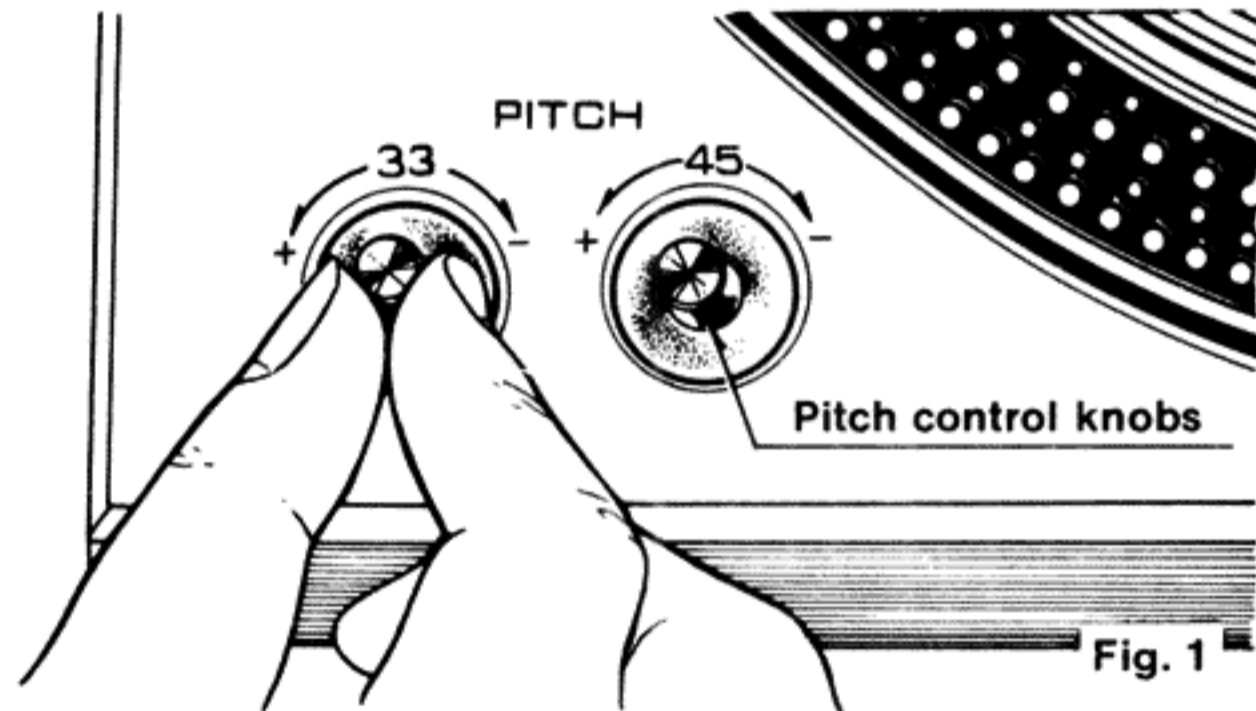
NOTE

*If there is a change in the incoming power-line frequency used for strobo neon-lamp indication, the strobo dots may then begin to move, although very slightly.

Though commercial electrical power is widely thought to be very stable with respect to frequency, if precisely measured over a period of time, there will be observed slight changes which amount to an average of 0.2%. This will cause the strobo dots to move.

This, of course, will never spoil sound reproduction in the least, as the turntable revolution is still stable.

Note that the cause of the apparent motion is the fact that the turntable's speed is more static than power-line frequency, and independent of it.

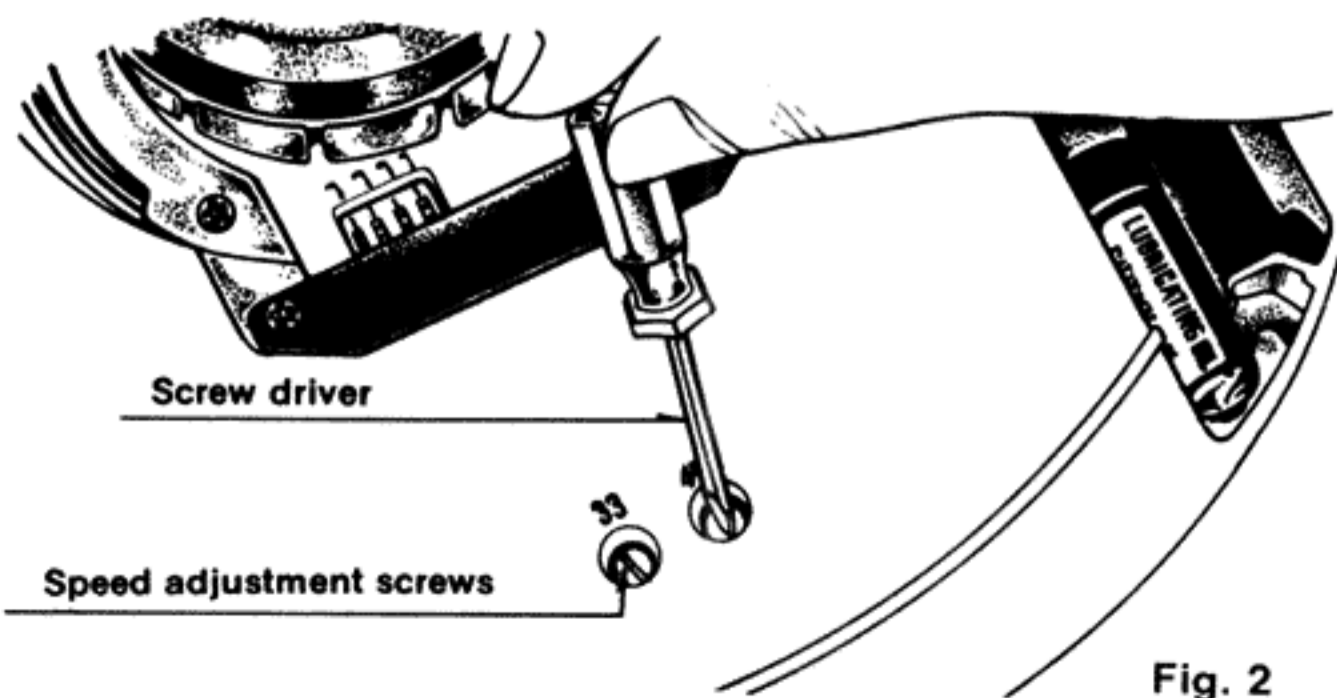


② SPEED ADJUSTMENT (with speed adjustment screws) (See Fig. 2)

*If, for any reason, the adjustment cannot be successfully made by the pitch control knobs, turn these screws clockwise or counterclockwise with screwdriver.

Clockwise The rotation of the turntable platter will be slowed down.

Counterclockwise The rotation will be speeded up.



③ ADJUSTMENT OF THE ARM LIFT HEIGHT

*The interval (the space between the stylus tip and record surface when the cueing lever is raised) of this tonearm has been adjusted from 5 to 10 mm (3/16" to 25/64").

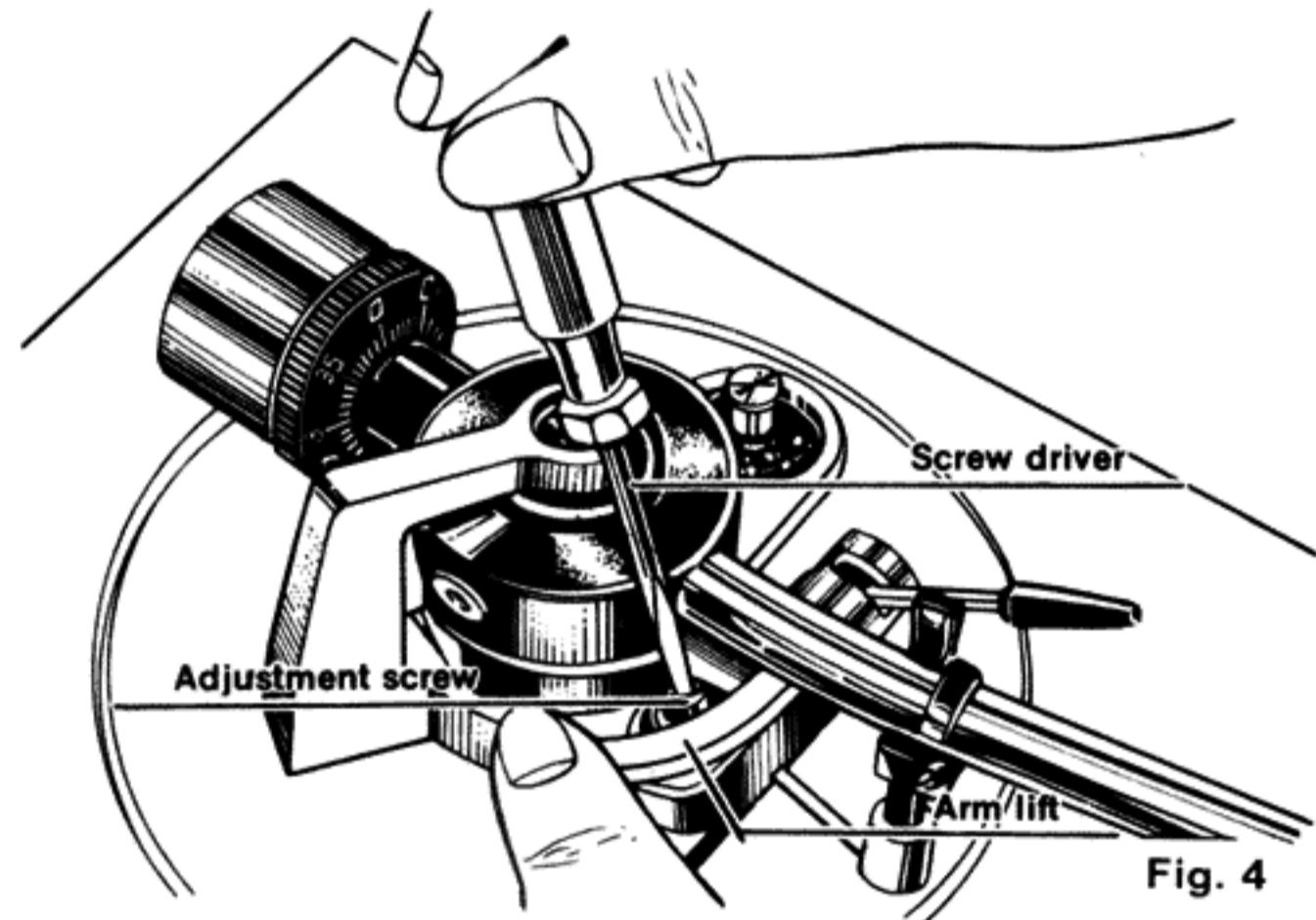
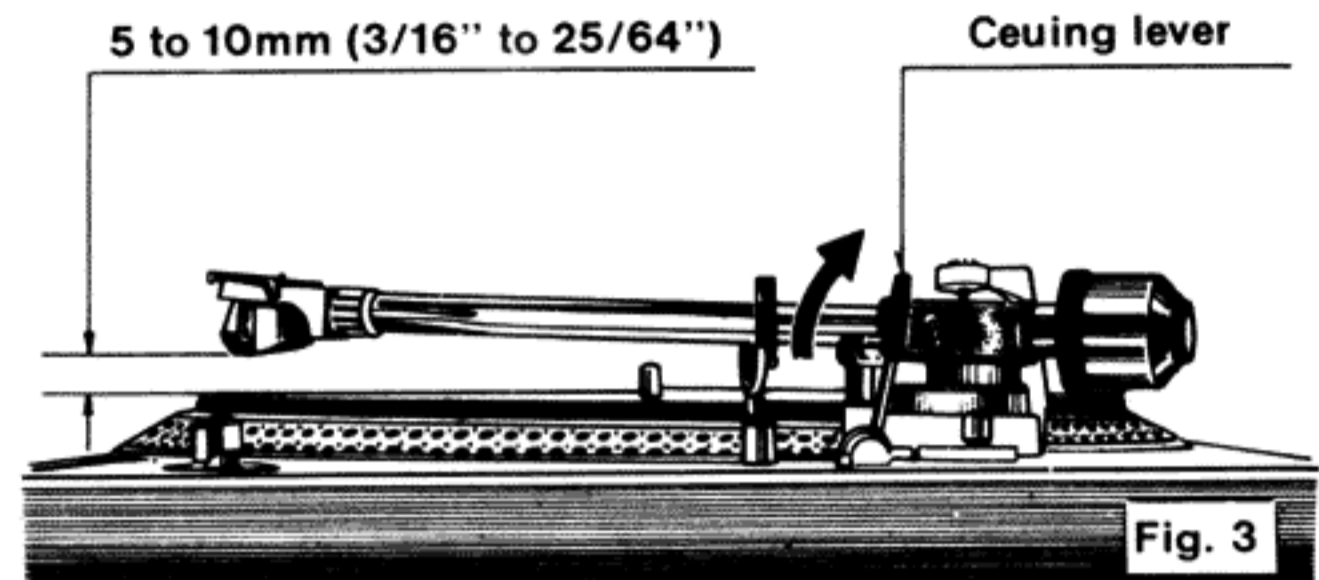
*If, for any reason, the range is too narrow or wide, turn the adjustment screw clockwise or counterclockwise pushing the arm lift. (See Fig. 3 and 4)

NOTE

*This screw has hexagonal head shape, so be sure to push the arm lift when you turn this screw.

Clockwise The space will be narrower.

Counterclockwise The space will be wider.



④ INSTALLATION OF THE CARTRIDGE

*Insert the head shell into the gauge. (See Fig. 5)

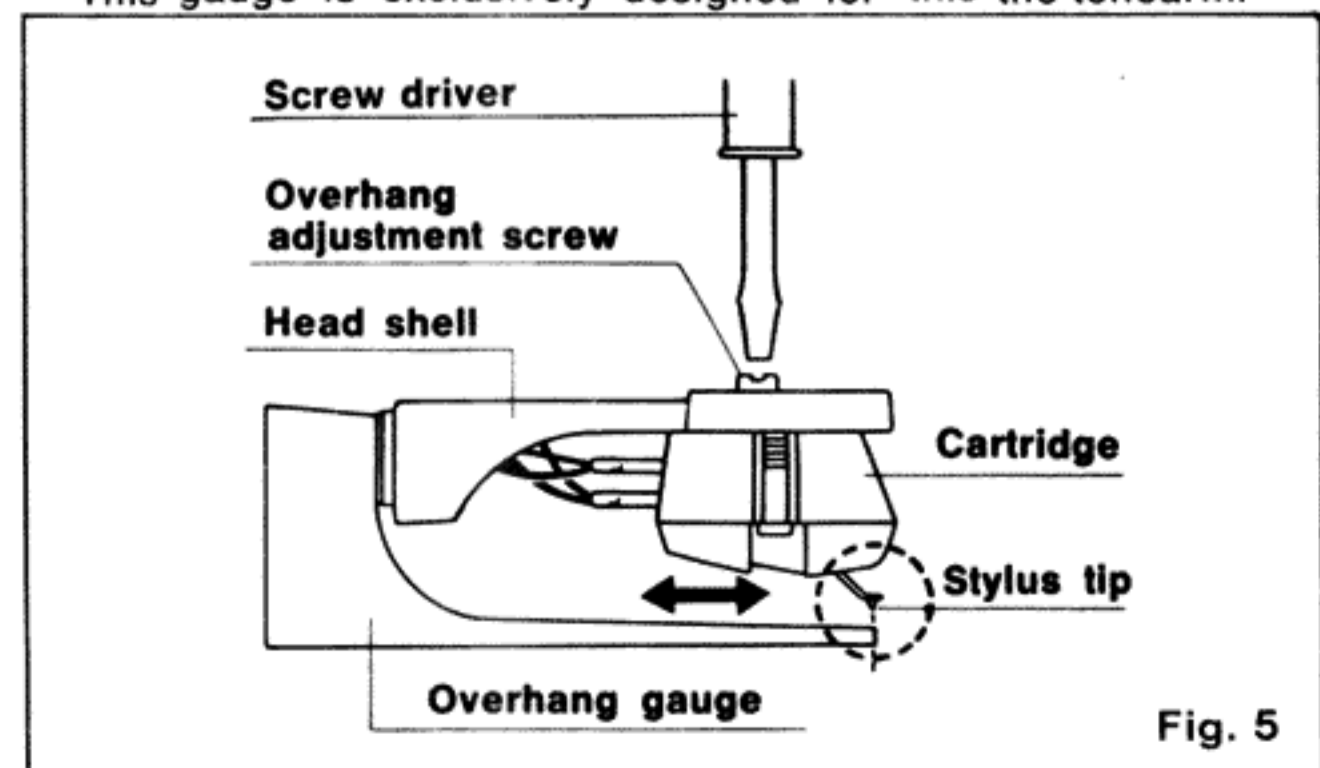
*Loosen overhang adjustment screw and move the cartridge forward or backward until the stylus tip lines up with the edge of the gauge.

*Tighten adjustment screw without moving the cartridge.

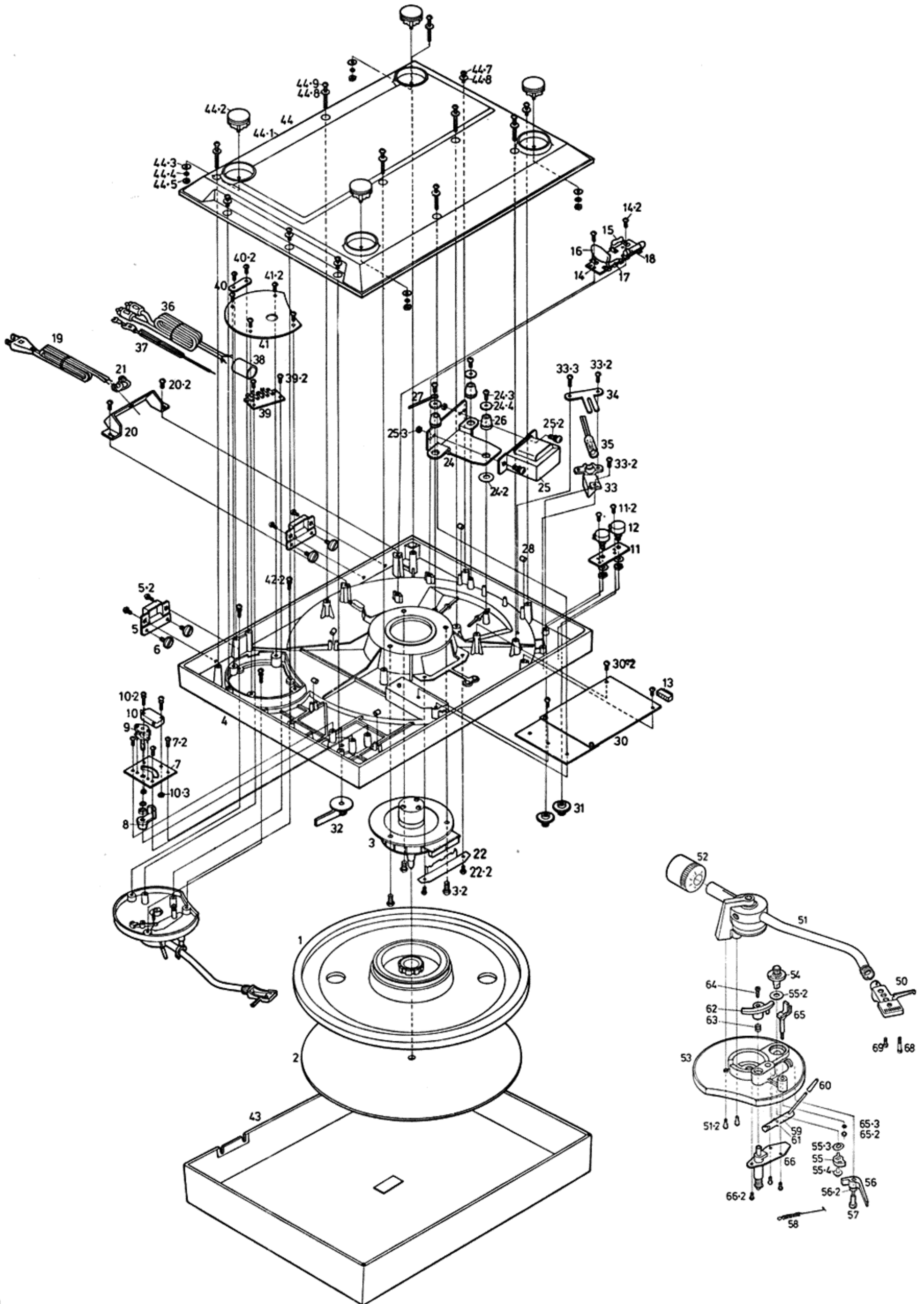
NOTE

*This position is the stylus for lowest tracking error and minimum distortion.

*This gauge is exclusively designed for this the tonearm.



EXPLODED VIEW OF DIRECT DRIVE PLAYER MODEL SL-1500



PARTS LIST

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks	Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
1	SFTE150-01A	Turntable platter	1	○	43	SFAD150M01A	Dust cover assembly	1	○
2	SFTG120-01	Turntable mat	1		44	SFAU150-01A	Bottom cover assembly	1	○
3	SFMZ150-01Z	Starter frame assembly	1	○					
3-2	XTN4+8BFU	Screw for stater frame	3		44-2	SFUZ150-01A	Audio insulator assembly	4	
4	SFAC150M01	Player case	1	○	44-3	SFXW022-1	Washer for audio insulator	4	
5	SFAT150-01A	Hinge assembly	2	○	44-4	XWA3BF	Spring washer for audio insulator	4	
5-2	XTV3+8BFZ	Screw for hinge assembly	4		44-5	XNG3HFUS	Nut for audio insulator	4	
6	SFXG020L01	Screw for hinge assembly	4		44-7	XTN3+33BFZ	Screw for bottom cover	7	
7	SFUP150-01	Switch plate	1	○	44-8	SFXW120-01	Washer for bottom cover	12	
7-2	XTN3+8BFU	Screw for switch plate	3	○	44-9	XTN3+10BFZ	Screw for bottom cover	5	
8	SFUM150-01	Switch cam	1						
9	ESRE113K30C	Rotary switch	1	○	50	SFPCC13001K	Head shell assembly	1	
10	AM77209	Micro switch	1		51	SFPAM15001K	Arm unit assembly	1	○
10-2	XYN3+C16FUS	Screw for micro switch	2		51-2	XYN3+C12FU	Screw for arm base	2	
10-3	XNG3HFUS	Nut for micro switch	2		52	SFPWG15001K	Balance weight assembly	1	○
11	SFUP150-02	Mounting plate for variable resistor	1	○	53	SFPKD15001	Arm base	1	○
11-2	XTN3+8BFU	Screw for mounting plate	2		54	SFPJK13001K	Anti-skating force control knob	1	
12	EVHBOAK15B62	Variable resistor	2		55	SFPJK13002	Canceler cam A	1	
13	SFDJ12805S	5-pin connector	1		55-2	SFPEW1100	Washer for canceler cam	1	
14	SFER110X04E	Terminal strip	1		55-3	SFUPWR005	Washer for canceler cam	1	
14-2	XTN3+8BFU	Screw for terminal strip	2		55-4	XTW26+5DFU	Screw for canceler cam	1	
15	ERG1ANJ123	Carbon film resistor	1		56	SFPJK13003	Canceler cam B	1	
16	ECQM6473MZ	Capacitor	1		56-2	SFXW551D2	Washer for canceler cam B	1	
17	ERD12TJ4R7	Carbon resistor	1		57	SFPJK15002	Cam shaft	1	○
18	XBAS2B0201	Fuse	1		58	SFPSP13001	Spring for canceler	1	
19	SPT-1	AC power cord	1		59	SFPJL13007K	Cueing lever assembly	1	
20	SFUP130-04	Mounting plate for AC power cord	1		60	SFPAB12002	Knob for cueing lever	1	
20-2	XTN3+8BFU	Screw for mounting plate	2		61	SFPGM13001	Cueing rubber	1	
21	SFHK040L	Bushing for AC power cord	1		62	SFPRT13003K	Arm lift	1	
22	SFUP130-06	Print base cover	1		63	SFQA829-03	Spring for arm lift	1	
22-2	XTN3+6BFU	Screw for print base	2		64	SFXG829-1	Screw for adjustment of arm lift height	1	
24	SFUP130-03	Mounting plate for transformer	1		65	SFPRT22001K	Arm rest	1	
24-2	SFXW120-02	Washer for mounting plate	3		65-2	XNG26EBN	Nut for arm rest	1	
24-3	XTN3+8BFU	Screw for mounting plate	3		65-3	XWA26BFU	Spring washer for arm rest	1	
24-4	SFXW750-01	Washer for mounting plate	3		66	SFPAB13008K	Arm lift base assembly	1	
25	MPT-006	Transformer	1		66-2	XTN3+5BFU	Screw for arm lift base	3	
25-2	XYN4+C8FUS	Screw for transformer	2						
25-3	XNG4HFUS	Nut for transformer	2		68	SFCZV8800	Screw for cartridge	2	
26	SFGC827M01	Cushion rubber for transformer	3		69	SFPEV7800	Screw for cartridge	2	
27	SHE36	Cord holder	1						
28	SFGZ120-02	Clamping rubber for leadwires	5						
30	SFDP130-01A	Circuit plate assembly	1						
30-2	XTN3+8BFU	Screw for circuit plate	3						
31	SFKT130-01A	Variable pitch control knob	2						
32	SFKT150-01A	Start lever	1	○					
33	SFUM130-01	Neon lamp base	1						
33-2	XTN3+8BFU	Screw for neon lamp	2						
33-3	XTN3+6BFU	Screw for neon lamp	1						
34	SFUP150-03	Neon lamp holder	1	○					
35	SFDN150-01A	Neon lamp assembly	1	○					
36	SFDH028-01	Phono cable	1						
37	SFEL028-01E	Ground wire	1						
38	SFG T028-01	Cord clasper for phono cable	1						
39	SFER130-01	Terminal strip for phono cable	1						
39-2	XTN3+6BFU	Screw for terminal strip	2						
40	SFUP150-04	Clasper for AC power cord	1	○					
40-2	XTN3+8BFU	Screw for clasper	2						
41	SFUP150-05	Shield cover	1	○					
41-2	XTN3+8BFU	Screw for shield cover	4						
42-2	XTN3+8BFU	Screw for tone arm assembly	3						
ACCESSORY PARTS									
	A1	SFWE154A1	45 r.p.m adaptor	1					
	A2	SFWO010	Oil	1					
	A3	SFKO135-01E	Overhang gauge	1					
	A4	SFNU150M01	Printed Matter (for U.S.A)	1					○
	A5	SFNU150C01	Printed Matter (for Canada)	1					○
PACKING MATERIALS									
	P1	SFHP150M01	Inside packing case	1					○
	P2	SFHH130-04	Side pad (Front)	1					
	P3	SFHH130-05	Side pad (Rear)	1					
	P4	SFHH130-03	Accessory box	1					
	P5	SFHD135-01	Magnet cover	1					
	P6	SFHK100-1	Pad. tone arm	1					

COMPONENT PACKING PROCEDURE

