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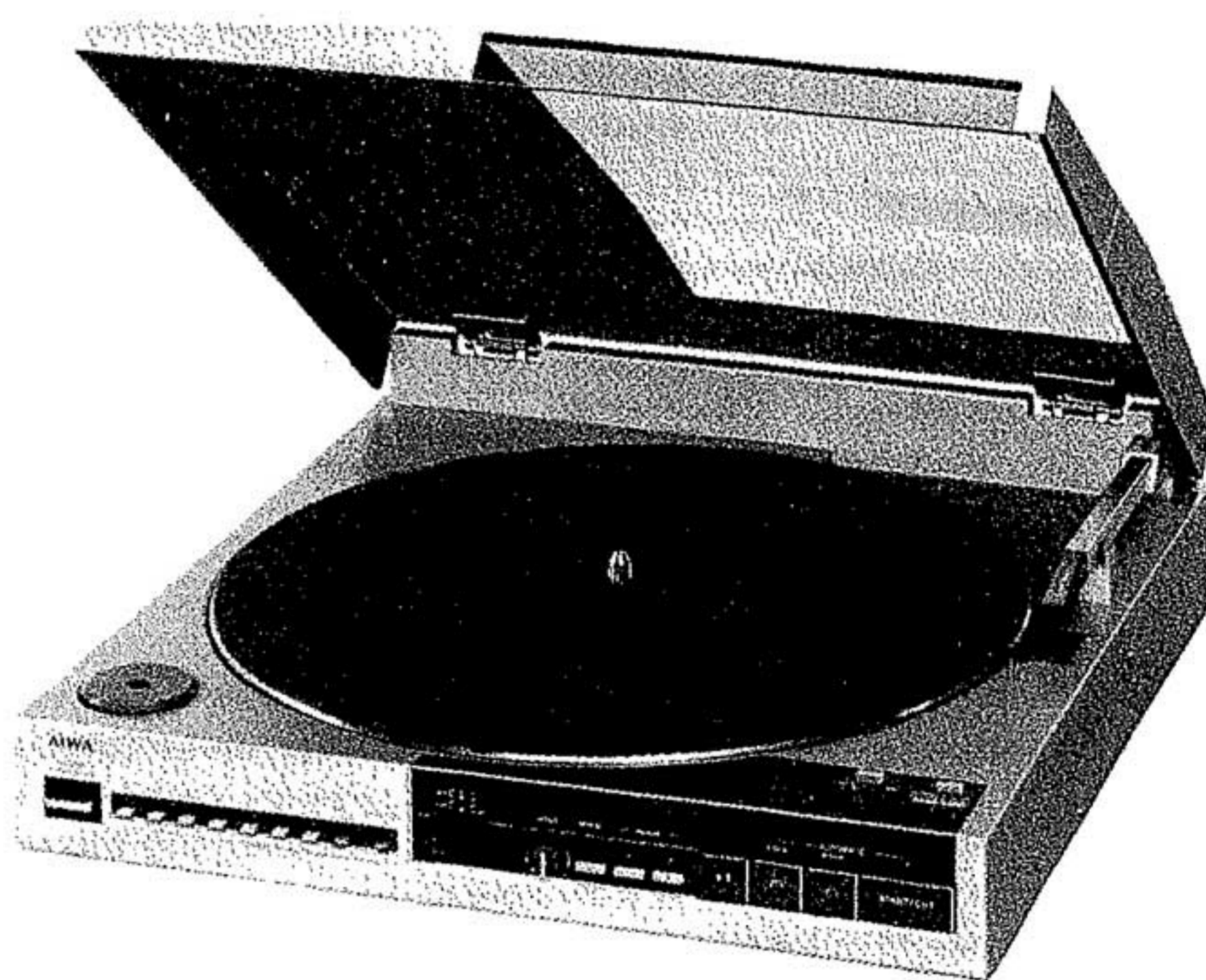
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SERVICE MANUAL

STEREO TURNTABLE

MODEL NO.

LX-70



TYPE. H, HU, E, G

SPECIFICATIONS

« GENERAL »

Semiconductors: 6ICs, 18 transistors, 21 diodes,
12 LED, 4 Photo transistor,
1 photo interrupters

Power source: H, HU, E models
AC 120V/220V/240V
switchable, 50/60Hz

Power consumption: G model
AC 240V, 50/60Hz
H, HU, G models
14W
E, model
13W

Dimensions: 330(W) x 88(H) x 330(D) mm
(13" x 3 1/2" x 13")

Weight: 5.2kg (11.45 lbs.)

« TURN TABLE SECTION »

Drive system: Frequency generated direct drive
system

Motor: 4-phase 8-pole linear torque DD
hall motor

Turntable platter: Aluminum alloy diecast

Speeds: 33 1/3 and 45 rpm

Wow & Flutter: 0.03% (WRMS)

S/N ratio: 75 dB (DIN-B)

« TONE ARM SECTION »

Type: Linear tracking type

Effective arm length: 131 mm

Horizontal sensitivity: Less than 300mg

Vertical sensitivity: Less than 300mg

Tracking error: 10°

« CARTRIDGE SECTION »

Type: VM type

Frequency response: 20 ~ 20,000 Hz

Out put voltage: 2.3 ^{+1.5} _{-0.5} mV (1 kHz 3.54 cm/s)

Separation: More than 20 dB (33 1/3 rpm, at 1 kHz)

Stylus pressure: 1.5 ± 0.3g

Load impedance: 47 kΩ

Dynamic compliance: 7 x 10⁻⁶ cm/dyne

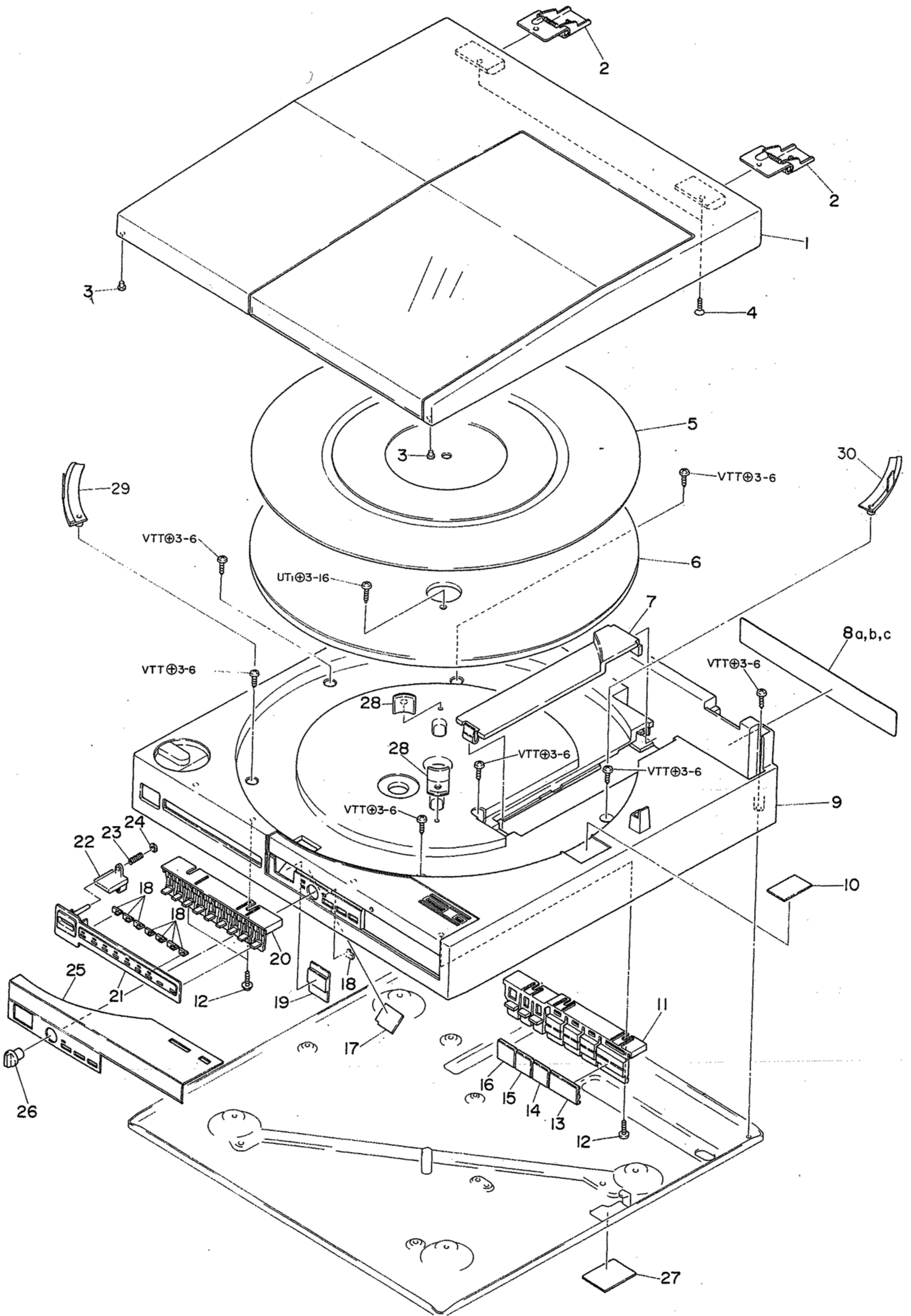
Stylus tip: 0.6mil, Diamond

- This schematic diagram is subject to change without notice in the interests of improved performance

EXPLODED VIEW-1

1 2 3 4 5 6 7

A
B
C
D
E
F
G
H
I
J



PARTS LIST

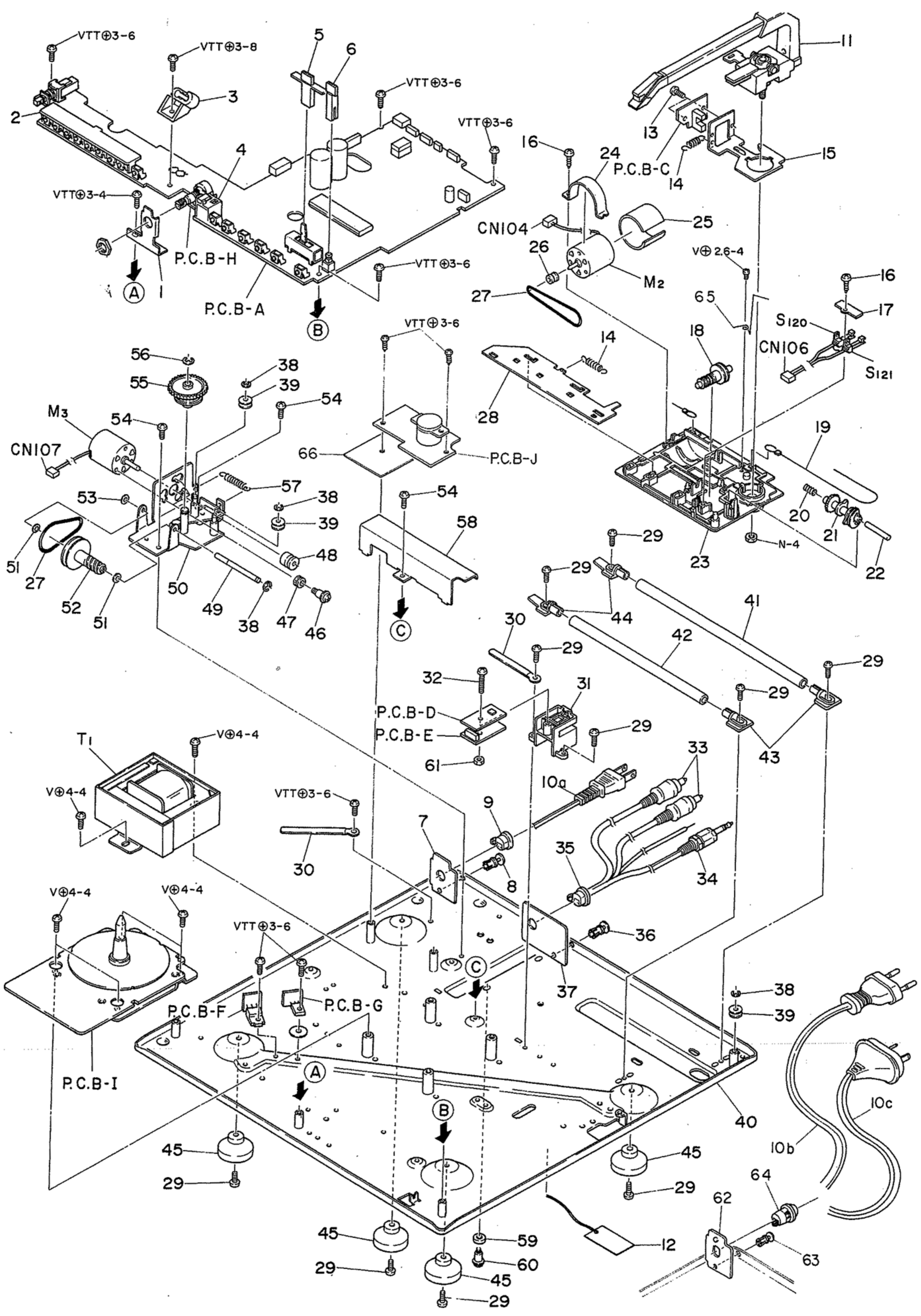
MECHANICAL PARTS

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1~4	84-124-058-01		Dust cover H ass'y F	*	1
1-1	84-124-059-01		Dust cover	*	1
1-2	84-124-019-01		Hinge ass'y	*	2
1-3	84-184-092-01		Damper	AP-2500	2
1-4	87-233-094-11		Q + 3 - 6		2
1-5	84-120-011-11		Rubber sheet	AP-D60	1
1-6	84-124-003-01		Turn-table	*	1
1-7	84-124-004-01		Cover, Cabinet	*	1
1-8a	84-124-030-01		Name plate, Spec. (H, HU models only)	*	1
b	84-124-032-01		Name plate, Spec. (E model only)	*	1
c	84-124-035-01		Name plate, Spec. (G model only)	*	1
9~25	84-124-040-31		Main cabinet H ass'y F	*	1
1-9	84-124-039-21		Cabinet, Main	*	1
1-10	84-124-026-01		Name plate	*	1
1-11	84-124-006-21		Push-key R	*	1
1-12	87-511-095-21		VFT ₁ + 3 - 8		4
1-13	84-124-011-01		Cap L	*	1
1-14	84-124-044-01		Cap S, R	*	1
1-15	84-124-043-01		Cap S, F	*	1
1-16	84-124-010-01		Cap S, UP	*	1
1-17	84-124-016-01		Mirror	*	1
1-18	84-123-016-01		Guide, Light	LX-100	8
1-19	84-124-009-01		Window, Strobo A	*	1
1-20	84-124-005-21		Push-key L	*	1
1-21	84-124-007-11		Guide, Button	*	1
1-22	82-189-027-11		Knob, POWER	FX-70	1
1-23	84-124-227-01		C-spring P	*	1
1-24	87-081-903-01		Stopper ring, CS		1
1-25	84-124-008-01		Plate R	*	1
1-26	82-785-026-01		Knob	CX-50	1
1-27	82-785-264-01		Sheet 25-30	CX-50	1
1-28	84-124-239-21		Spacer T.T	*	2
1-29	84-124-243-01		Cushion T.T L	*	1
1-30	84-124-240-01		Cushion T.T R	*	1

EXPLODED VIEW-2

1 2 3 4 5 6 7

A
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C
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E
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H
I
J



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
2-1	84-124-224-01		Holder B, Front	*	1
2-2	84-124-234-01		MS guide, LED	*	1
2-3	84-124-236-01		SR guide, LED	*	1
2-4	84-124-235-11		SP guide, LED	*	1
2-5	84-124-012-01		Knob, Sensor	*	1
2-6	84-124-013-01		Knob, Speed	*	1
2-7	84-123-027-01		Plate B, Jack (H, HU models only)	LX-100	1
2-8	87-084-063-01		Nylon rivet $\phi 3-5.5$ (H, HU models only)		1
2-9	87-085-165-01		Cord bushing (H, HU models only)		1
2-10a	87-034-956-01		AC power cord (H, HU models only)		1
b	87-034-877-01		AC power cord (E model only)		1
c	87-034-878-01		AC power cord (G model only).		1
2-11	84-124-101-21		Tone arm ass'y	*	1
2-12	84-124-952-01		Tag, Caution	*	1
13~61	84-124-062-11		Bottom cabinet ass'y F	*	1
2-13	87-081-501-01		VTT + 2.6-4		2
2-14	84-123-238-01		E-spring, Sensor	LX-100	2
2-15	84-124-209-11		Lever A, Sensor	*	1
2-16	87-351-094-01		VT ₁ +.3-6		2
2-17	84-124-222-01		Holder A, Switch	*	1
2-18	84-124-204-01		Worm gear A	*	1
2-19	84-124-233-01		Wire rope	*	1
2-20	84-124-228-01		C-spring, Cam A	*	1
2-21	84-124-207-11		Up-down, Cam A	*	1
2-22	84-124-219-01		Up-down, Shaft A	*	1
2-23	84-124-201-31		Mechanism chassis ass'y	*	1
2-24	84-124-208-01		Cover, Motor	*	1
2-25	84-117-357-01		Plate, Motor	AP-D50	1
2-26	84-124-217-01		Pulley, Motor	*	1
2-27	82-541-268-01		Rubber belt, Counter	TPR-950	2
2-28	84-124-210-01		Plate A, MASK	*	1
2-29	87-081-511-01		VTT + 3-6		10
2-30	87-038-039-01		Wire binder		2
2-31	84-124-211-01		Holder A, MASK	*	1
2-32	87-261-100-21		V + 3-16		1
2-33	84-124-665-21		Syncrate cord	*	1
2-34	84-199-606-01		Pin cord	AP-2300	1
2-35	87-085-101-01		Cord bushing		1
2-36	87-084-063-01		Nylon rivet $\phi 3-5.5$		1
2-37	84-124-045-01		Plate A, Jack	*	1
2-38	87-441-005-01		STE-2		4
2-39	87-071-013-11		Pulley A		3
2-40	84-124-061-11		Bottom cabinet ass'y	*	1
2-41	84-124-214-01		Pipe A	*	1
2-42	84-124-215-01		Pipe B	*	1
2-43	84-124-206-11		Holder, Pipe B	*	2
2-44	84-124-205-11		Holder, Pipe A	*	2
2-45	84-120-025-11		Rubber foot ass'y	AP-D60	4
2-46	87-081-483-01		Motor screw, M2.6		3
2-47	87-087-029-01		Rubber cushion		3
2-48	84-117-361-01		Pulley, Motor	AP-D50	1
2-49	84-123-206-01		Shaft A, Worm	LX-100	1
2-50	84-124-231-01		Motor holder B ass'y	*	1
2-51	84-123-309-01		W $\phi 3.2-\phi 8$	LX-100	2
2-52	84-123-205-61		Worm gear B	LX-100	1
2-53	87-067-039-01		PW 2.3-8-0.25		1
2-54	87-067-020-01		VTT + 3-4		3
2-55	84-123-204-01		Pulley gear A	LX-100	1
2-56	87-441-011-01		STE-4		1
2-57	84-123-236-01		E-spring, Solenoid	LX-100	1
2-58	84-124-225-01		Lead holder, C	*	1
2-59	84-123-060-01		Rubber cushion 4-10-1.5	LX-100	1
2-60	84-124-238-01		Screw	*	1
2-61	87-391-717-01		Nut 3-2.4		1
2-62	84-123-061-01		Plate E, Jack (E, G models only)	LX-100	1
2-63	87-084-078-01		Nylon rivet 3-4.5 (E, G models only)		1
2-64	87-085-185-01		Stopper, AC power cord (E, G models only)		1
2-65	84-124-242-01		T-spring, Wire	*	1
2-66	84-124-244-01		Insulation sheet (E,G models only)	*	1

ADJUSTMENT INSTRUCTIONS

1. Stylus Height Adjustment

- 1) Put the checker on the brim of the rubber sheet. Then, adjust the adjustment screw so as that the point of the stylus reaches the height as illustrated. (See Figure 1)

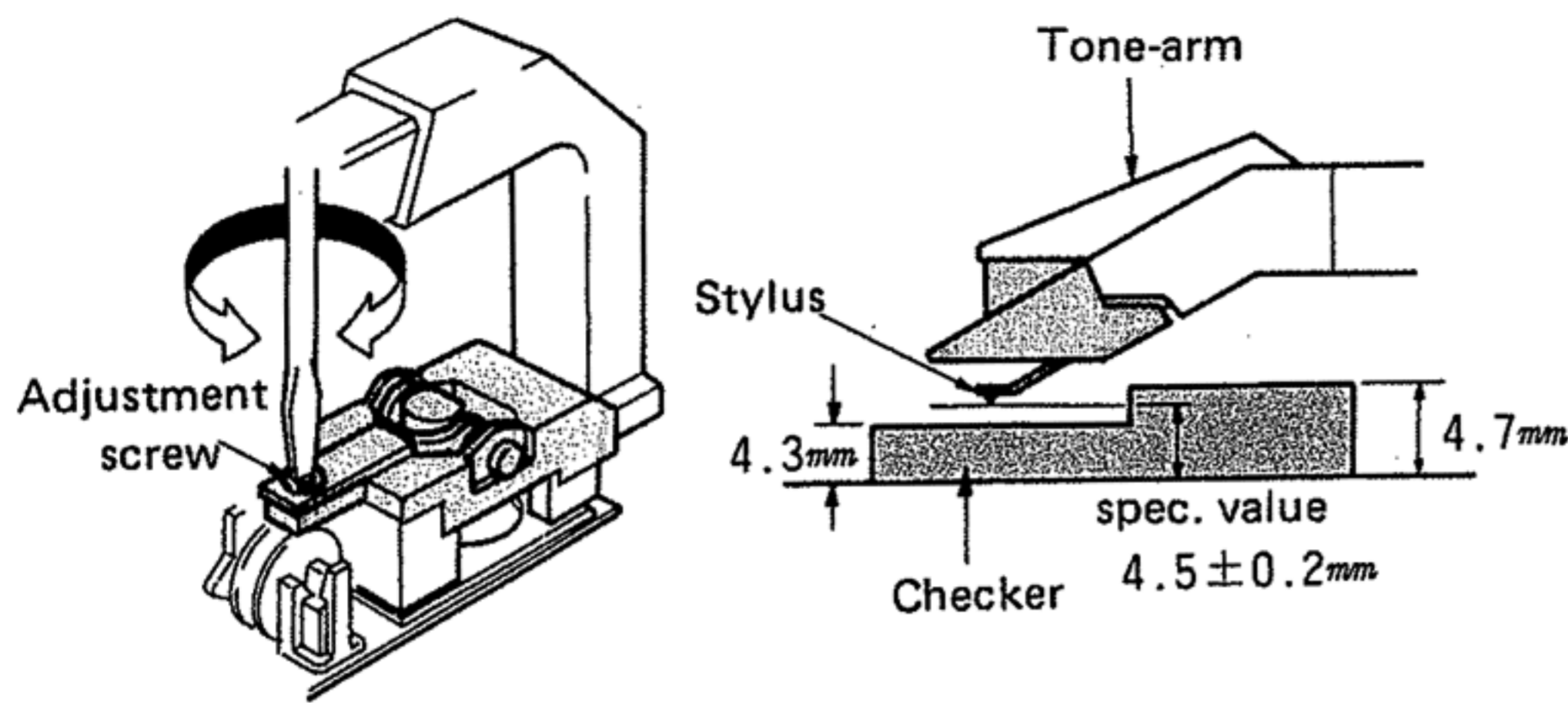


Fig. 1

- 2) After completed the adjustment point (1), make a half turn of the turn-table to confirm the stylus height of the adjustment point (2). If it is out of the specification, readjust the height for 4.5 ± 0.2 mm. (See Figure 2)

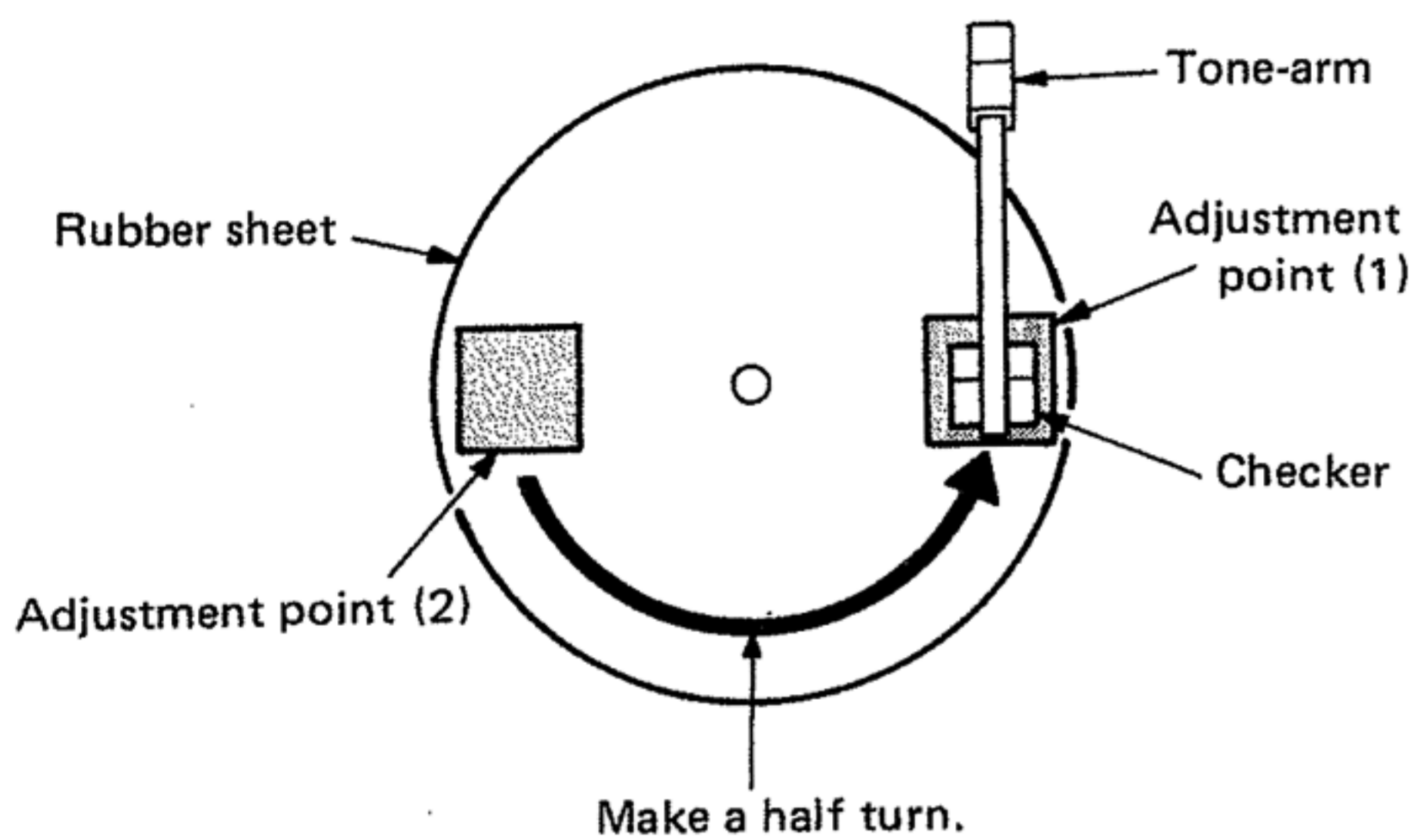


Fig. 2

2. Disc Sensor Adjustment

When adjusting the disc sensor, put the standard reflection plate on the rubber sheet as illustrated. As to the adjustment method, refer to the disc sensor adjustment described in the Wiring-1. (See Figure 3)

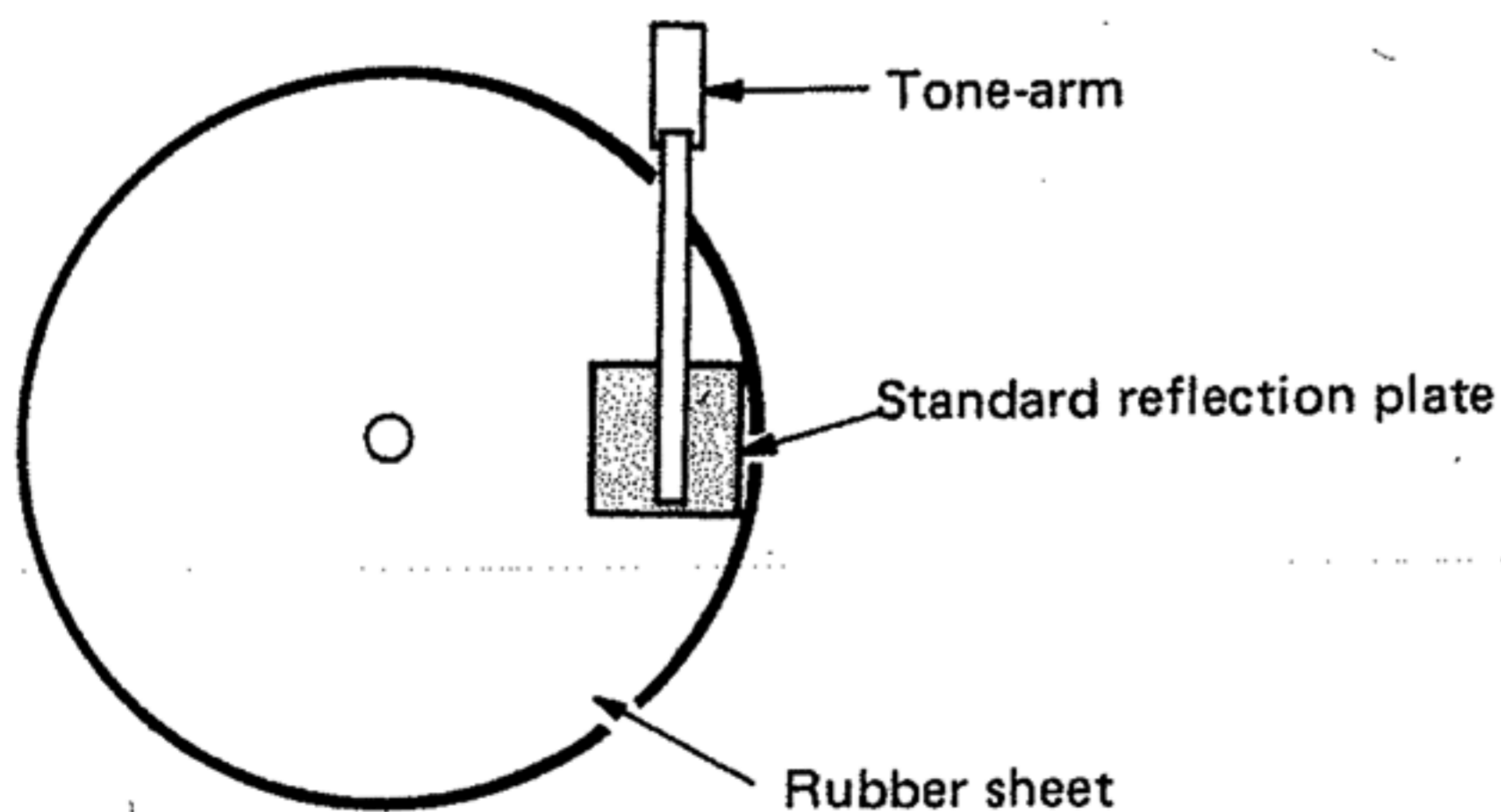


Fig. 3

3. Auto-in and -out Adjustment

• 30 cm record disc

- 1) Set the AIWA test record (ATR-003) and press the START/CUT button. Adjust the adjustment boss so that the count number of auto-in becomes 25 ± 1 . (See Figure 4)

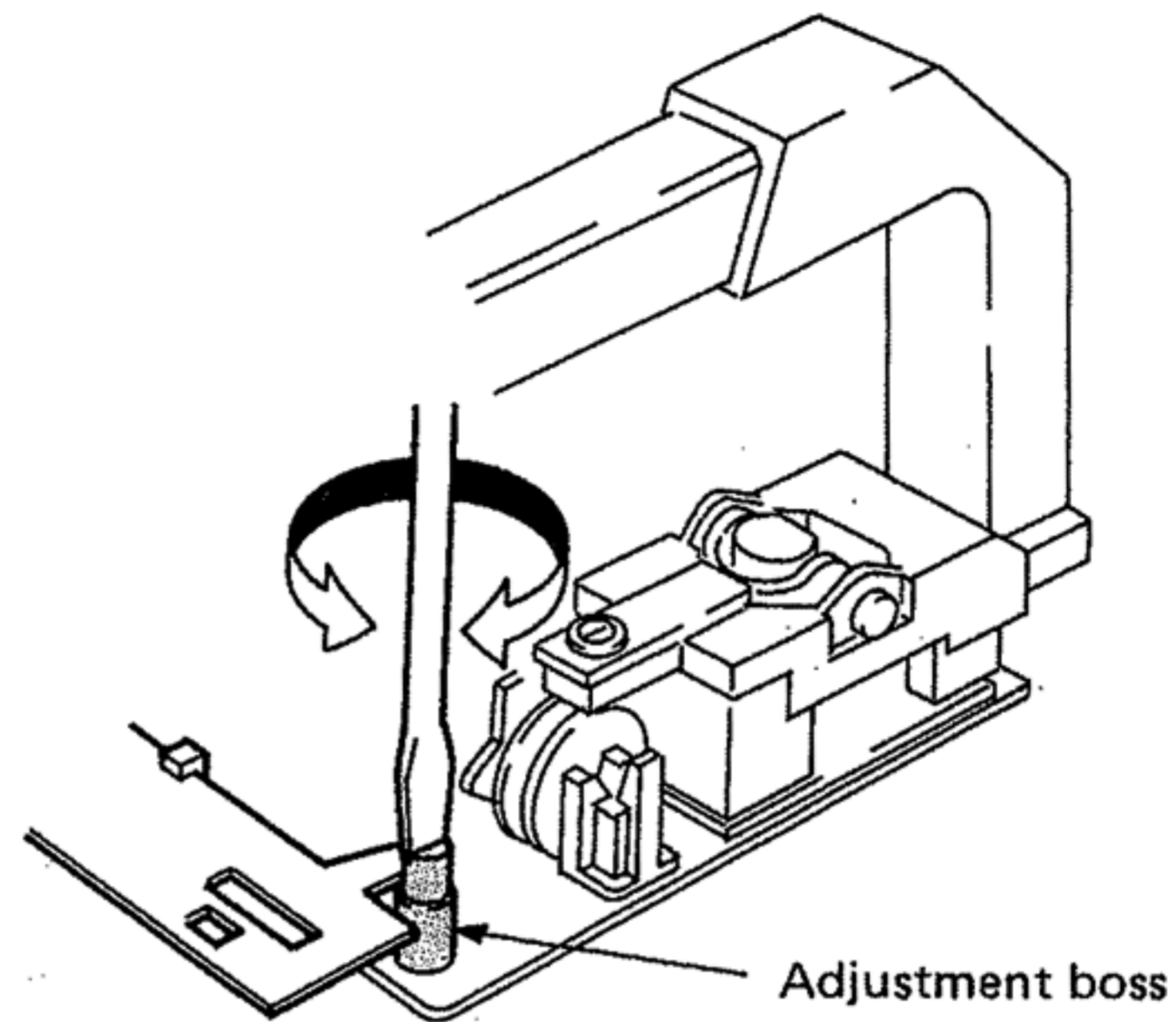


Fig. 4

- 2) After the above adjustment, confirm that the count number of auto-out becomes 11 ~ 14. If the count is out of the specification (11 ~ 14), readjust the auto-in adjustment.

• 17 cm record disc

- 1) Press the START/CUT button; confirm that the count number of auto-in becomes 32 ± 4 .

[Method of Confirmation]

Make a sheet as illustrated. Then, put it under the stylus of the tone-arm, and shift the tone-arm. When it passed the point of 25 cm lead-in, pull out the sheet. (See Figure 5)

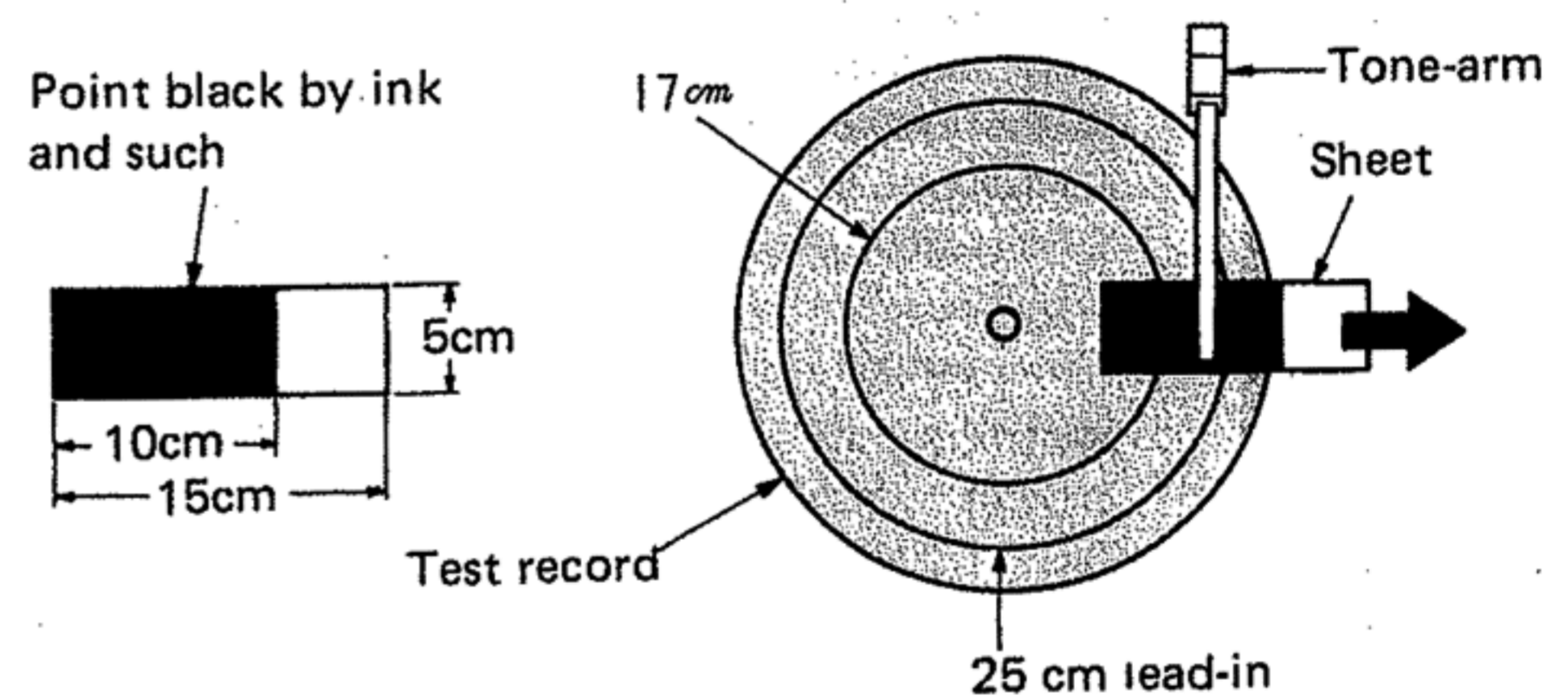


Fig. 5

Circuit description

1. TLCS-43 (IC 6) pin description

Pin No.	Symbol	Item
①	TEST	Power terminal.
② ~ ⑤	KEY 1 ~ 4	Key inputs
⑥	UP M	Arm UP output. Set to LOW during arm UP operation.
⑦	DOWN M	Arm DOWN output. Set to LOW during arm DOWN operation.
⑧	ARM R	Arm RIGHT MOVEMENT output. Set to LOW during arm right movement.
⑨	ARM L	Arm LEFT MOVEMENT output. Set to LOW during arm left movement.
⑩ ~ ⑯	PRG. ING1 ~ 7	Program No. LED indication output. LED lights with the output set to LOW.
⑰	REPEAT	REPEAT indication output. LED lights with the output set to LOW.
⑱	RPM	Phono motor speed select output. LOW level : 45 rpm HIGH level : 33 rpm
⑲	PH M	Phono motor ON/OFF output. LOW level : Phono motor turns HIGH level : Phono motor stops
⑳	DK MUTE	Disk sensor mute output. Kept at LOW from arm DOWN till UP while records are being played.
㉑	GND	GND
㉒	INT	Not used
㉓	RST	RESET input. Reset at LOW level (Microcomputer initialized)
㉔, ㉕	XIN, XOUT	Crystal connection terminals.
㉖	LOAD OUT M	Loading outputs. Grounded in LX-70.
㉗	LOAD IN M	Angle sensor mute output. Mutes at LOW level.
㉘	A KILL	Kills the angle sensor in the arm UP mode.
㉙	REMOAT B	REMOTE output. Starts at arm RESET position at HIGH level, and drops DOWN at arm PAUSE position.
㉚ ~ ㉛	KEY9 ~ KEY6	Key matrix outputs.
㉜	DK SNS	Disk sensor input. Set to LOW level between tunes.
㉝	S SNS	Record size detection output. Set to LOW level at the edge of the record.
㉞	DOWN SNS	Arm UP/DOWN position detection input/output.
㉟	UP SNS	LOW level with arm DOWN, and LOW level with arm UP.
㊱	POSI 2	Position sensor inputs.
㊲	POSI 1	
㊳	REMOAT A	Not used
㊴	KEY 5	Key input
㊵	VDD	+5V, power terminal.

Table-1

2. Disk sensor circuit

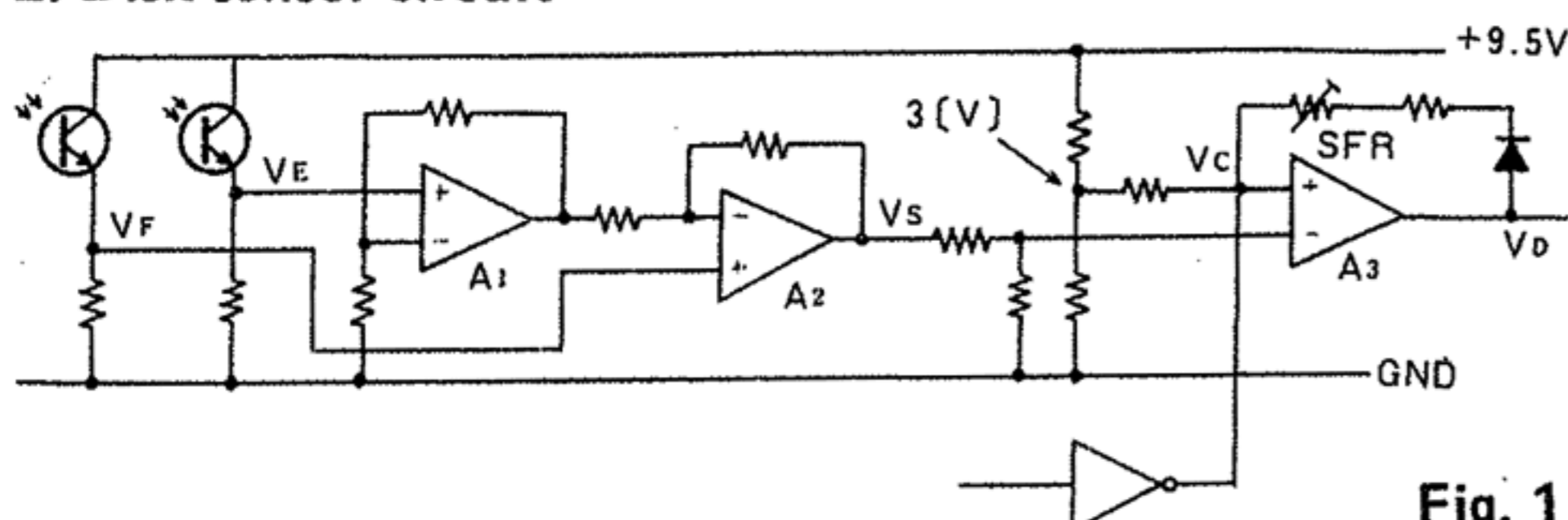


Fig. 1

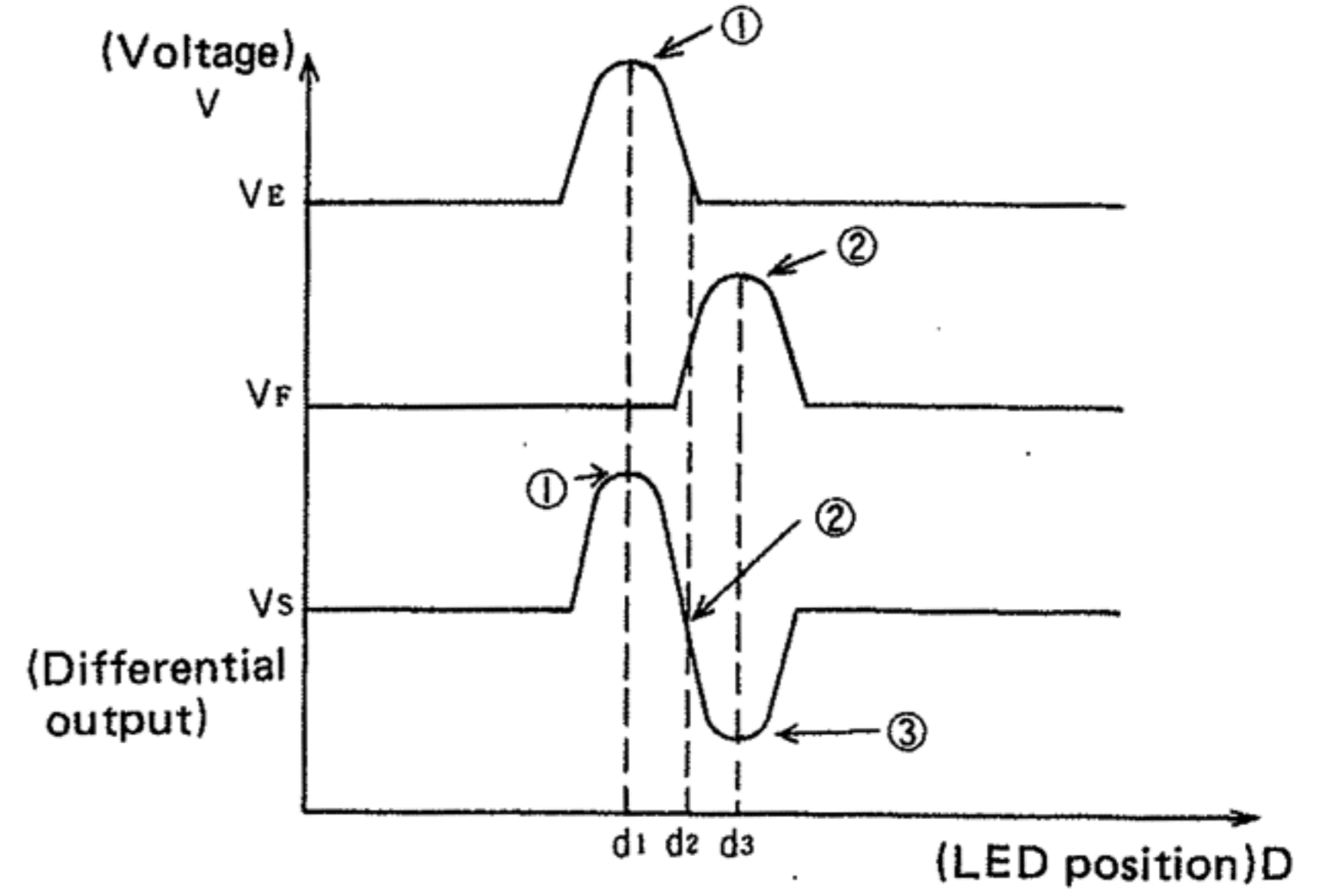


Fig. 2

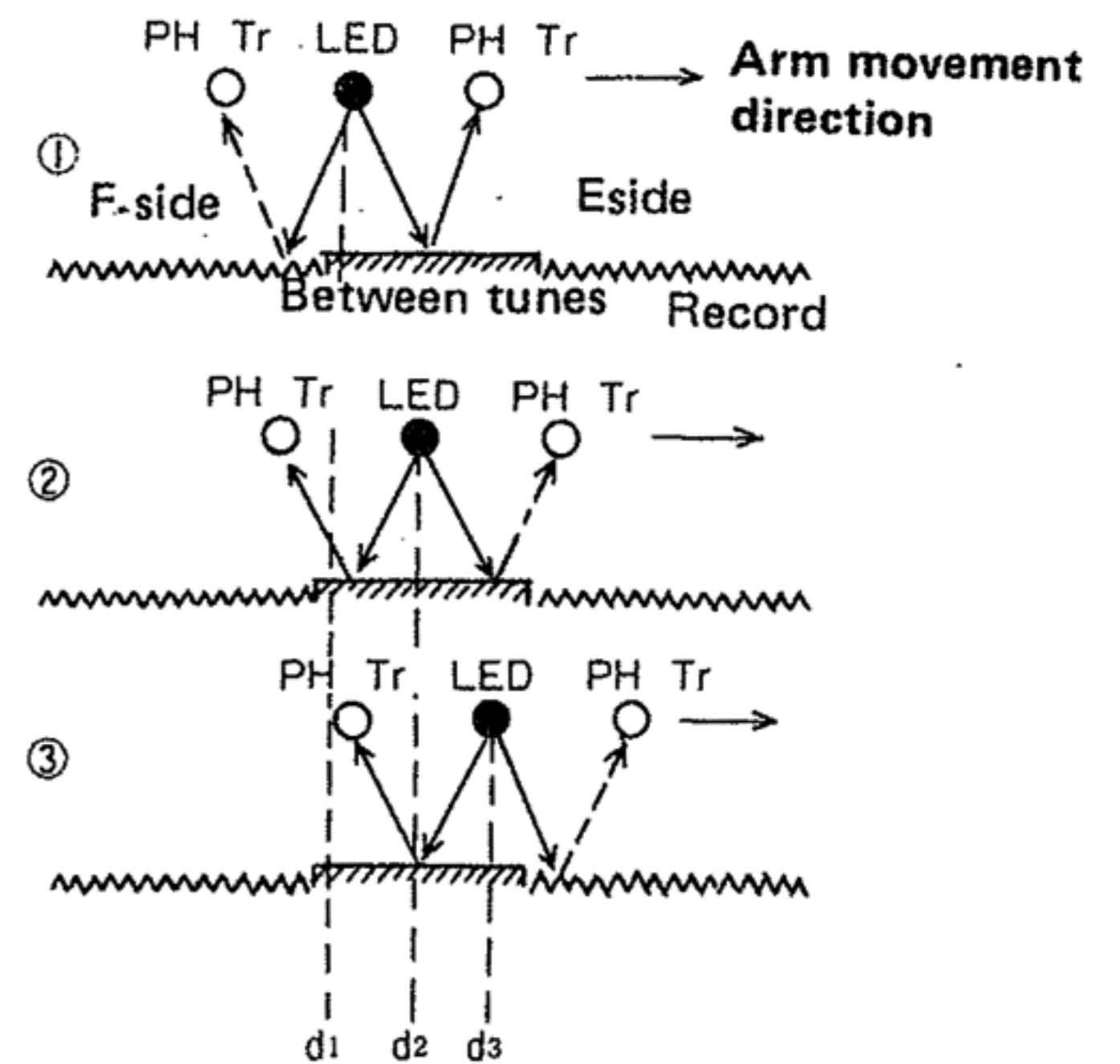


Fig. 3

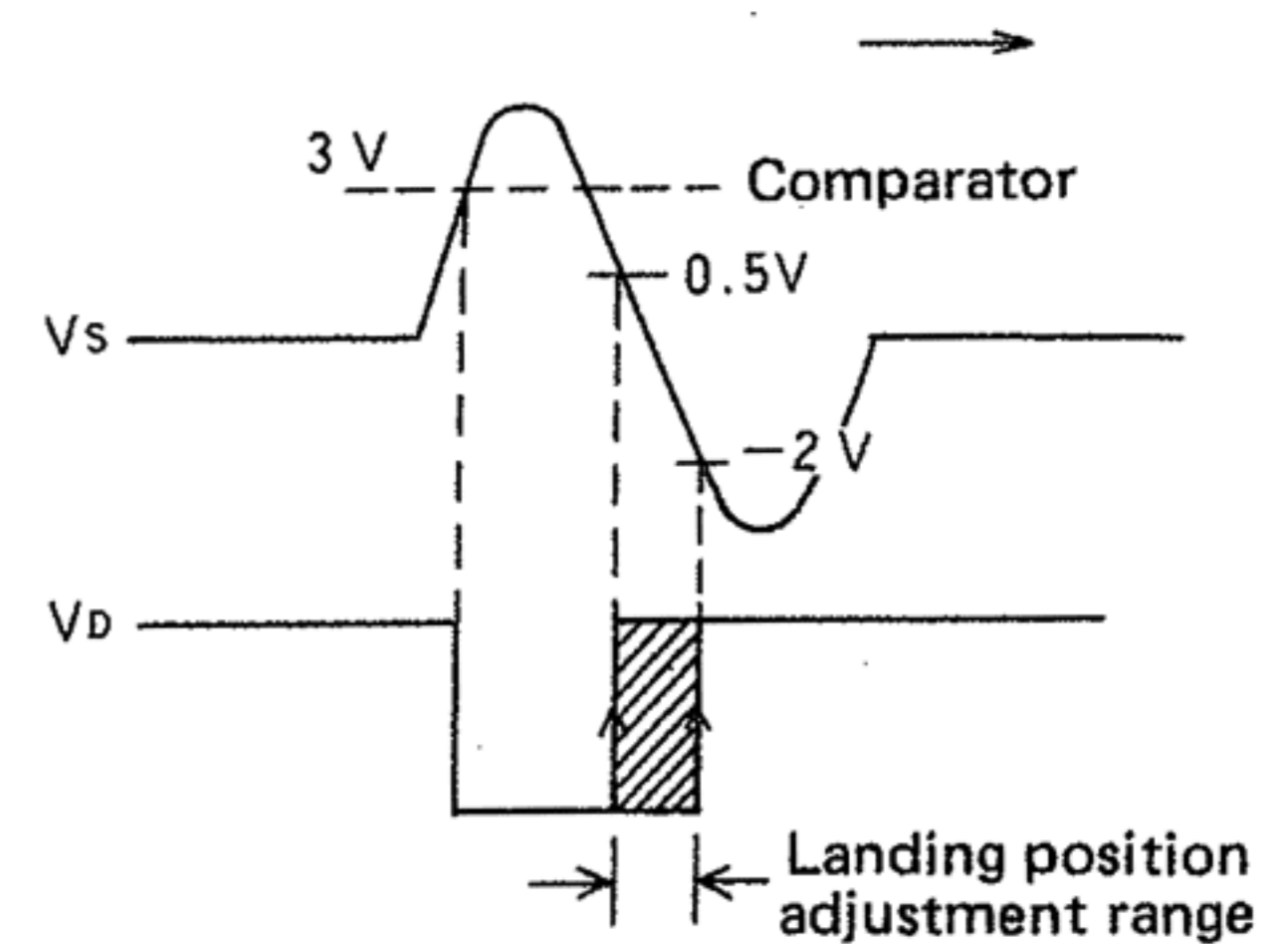


Fig. 4

When the tone arm comes to the position (1) shown in Fig. 3, the strong light reflected between tunes strikes the phototransistor on the E side, so the output shown as (1) in Fig. 2 is obtained. Next, when the tone arm moves to the position (2), both transistors E and F are struck by light coming from between tunes, so the differential output between V_E and V_F is set to 0. When the tone arm passes between tunes and reaches position (3), only the phototransistor on the F side receives the between-tune reflection, so the output (3) shown in Fig. 2 is obtained. As is seen above, the output obtained when the tone arm passes between tunes, is V_S shown in Fig. 2.

It is judged that point (2) of the 0 cross is the center of the between-tunes section from this output.

A3 in Fig. 1 converts the obtained between-tunes waveform to a digital signal. When the input exceeds the comparator voltage 3V, the output is set to LOW; when it drops to the cross voltage (+0.5 ~ -2V) set by the SFR, the output is set to the HIGH level. The tone arm stops at the rise. As seen from Fig. 4, the lowering position can be changed by changing the cross voltage.

This is the role of the SFR.