

JVC

SERVICE MANUAL

MODEL
QL-Y5F

QUARTZ FULLY AUTOMATIC
TURNTABLE



No. 2522
MAR. 1980

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Warning:
When replacing the parts marked with \triangle , be sure to use the designated parts to ensure safety.

1. Specifications

MOTOR SECTION

Motor	: Coreless, DC type, FG servo-motor
Drive system	: Direct drive
Speeds	: 33-1/3, 45 rpm
Wow and flutter	: 0.025 % (WRMS) 0.011 % (by K & K measuring method)
Signal-to-noise ratio	: More than 78 dB (DIN-B)
Speed detection	: Frequency generator
Starting torque	: 1 kg-cm
Speed deviation	: Within 0.002 %
Load characteristics	: 0 % (with 130 g total tracking force)
Drift	: 0.0001 %/H
Power characteristics	: 0 % (± 10 V)
Temperature characteristics	: 0.00005 %/ $^{\circ}$ C
Platter	: 31 cm

TONEARM SECTION

Type	: Dynamically-balanced electronic servo controlled arm
Effective length	: 245 mm
Overhang	: 15 mm
Weight range	: 14.5 – 24 g (including headshell weight)
Variable tonearm height range	: 42 – 48 mm (preset to 45 mm)

CARTRIDGE SECTION

(Except for U.S.A., Canada and the U.K.)

Model	: MD-1025EB
Type	: Moving Magnet (MM)
Frequency response	: 10 Hz – 25,000 Hz
Output	: 3 mV (1,000 Hz)
Channel separation	: 25 dB (1,000 Hz) (test record TRS-1)
Load resistance	: 47 k Ω – 100 k Ω
Compliance	: 10 x 10 ⁻⁶ cm/dyne (Dynamic) 30 x 10 ⁻⁶ cm/dyne (Static)
Stylus tip	: 0.3 x 0.7 mil diamond
Stylus	: DT-Z1EB
Optimum tracking force	: 1.75 \pm 0.25 g

GENERAL

Power source	: Refer to Table at page 24
Power consumption	: Refer to Table at page 24
Dimensions	: 16.9(H) x 48(W) x 43(D) cm (6-5/8" x 1-15/16" x 1-3/4") (Since the dimensions show only the design measurements, consideration is required when installing the unit in a limited space such as a rack, etc.)
Weight	: 10.5 kg (23.1 lbs) (without corrugated card board case)
Accessory	: EP adaptor 1

Design and specifications subject to change without notice.

CHECKING YOUR LINE VOLTAGE (For U.S. Military Market and Other Countries)

Before inserting the power plug, please check this setting to see that it corresponds with the line voltage in your area. If it doesn't, be sure to adjust the voltage selector switch to the proper setting before operating this equipment. The voltage selector switch is located either on the set's or the chassis. Simply insert a screw driver into the voltage selector switch and turn it in either direction while pressing slightly and in such a way that desired voltage marked on the switch is positioned at the arrow marked on the rear panel or the chassis. The voltage selector switch accommodates up to three turns in either direction.

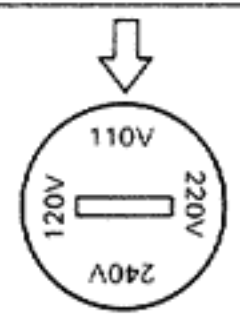


Fig. 1

2. Service Precautions

1. For repair of the tonearm, only the parts whose names and numbers are listed on page 17 are replaceable. So be careful not to remove any other part.
2. For repair of any component other than the tonearm, be sure to perform part replacement in accordance with the appropriate unit of the block shown in the disassembly diagram.
3. When remounting the motor base or tonearm ensure positive contact with the base of the tonearm (as shown in Fig. 14B) and then secure.
4. Ensure that the turntable is level when servicing motor rotation or arm action.

5. If power is applied when the motor connector is disconnected the drive transistor will be damaged. Therefore, never disconnect the motor connector if the power is or will be applied.
6. Note that when repairing the printed board, if the heat-sink is removed, transistor temperature will rise.
7. Upon completion of repair or replacement of the tonearm, motor or any other component, be sure to perform Lead-in and Lead-out adjustments.
8. Locating the tuner antenna and the turntable output lead closely may cause noise due to disturbance from the tuner; therefore, place them as far from one another as possible.

3. Names and Their Functions

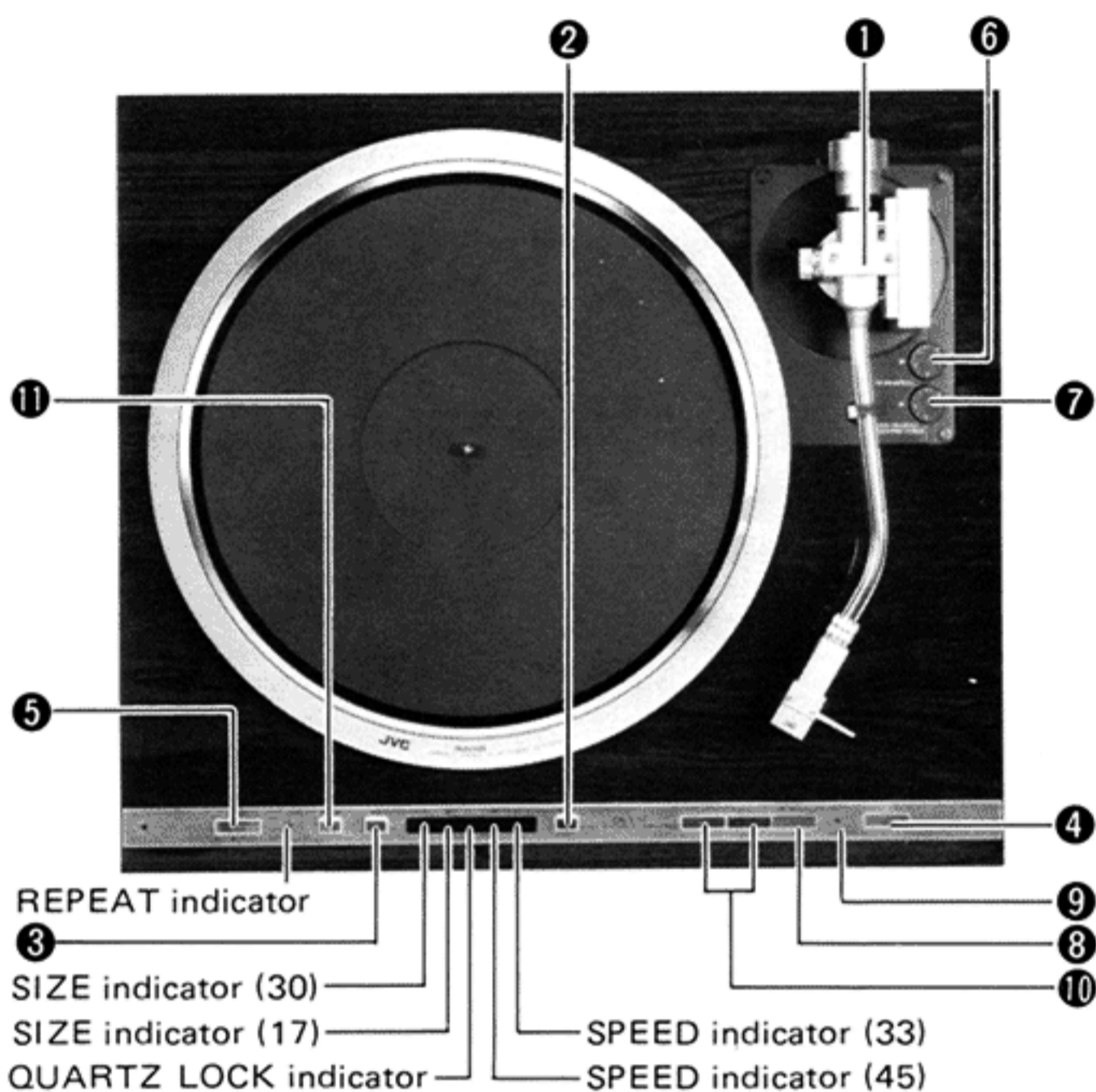


Fig. 2

Note: When you re-depress the READY switch, make sure the tonearm is clamped on the arm rest, otherwise you may damage a record or the stylus. Even when the READY switch is set to OFF, about 1 watt power is consumed. Accordingly, disconnect the power cord from wall outlet to cut the power completely off.

6. Q-DAMPING knob

This knob is provided to smoothen stylus tracing horizontally and vertically along with the record disc grooves and to effectively lower the resonance peak levels of the tonearm. When Q-DAMPING is in operation:

1. Trackability and sound quality are improved,
2. Resistance against howling is much increased,
3. S/N ratio and wow-and-flutter are improved, etc.

7. ANTI-SKATING TRACKING FORCE knob

This knob is provided to cancel the centripetal force (sliding of the tonearm to the center of the record) and to prevent the stylus tip from sliding or exerting unwanted force to the inner side of the record groove. These are automatically and electrically set to the optimum value by selecting the designated stylus force.

8. UP/DOWN switch

When this button is pressed the tonearm will lower to the record surface, then the UP/DOWN indicator goes out. Pressing this button again will cause the tonearm to lift up from the record and the UP/DOWN indicator will come on.

9. UP/DOWN indicator

This indicator lights when the tonearm lifts up and goes out when it is lowered. This does not light during lead-in, reject or auto-return.

10. Tonearm transport switch

The tonearm can be moved manually or can be moved to any position of the record surface by pressing the following buttons.

- < : depressing this button will move the tonearm to the left, releasing it stops travel.
- > : depressing this button moves the tonearm to the right, releasing it stops travel.

11. REPEAT switch

Depress this button for repeated play. The REPEAT indicator lights to show that the REPEAT setting has been made. Press again to release the REPEAT function. The indicator will go out.

1. Tonearm

This tonearm is called an Electro-Dynamic Servo Tonearm. All the functions, the tracking force, anti-skating, Q-damping, etc. are done electrically.

2. SPEED switch

Select the speed depending on record rpm. The platter rpm is indicated by the SPEED indicators.

3. SIZE switch

Select the size depending on record size. Selected size is indicated by the SIZE indicators.

4. START/STOP switch

Press this switch to rotate the platter. When the speed reaches normal, QUARTZ LOCK indicator (green) lights. Then the tonearm automatically lifts up and moves to lead-in.

5. READY switch

ON: Depress this switch to power the turntable system on. SPEED and SIZE indicators light. Stylus force, anti-skating and Q-damping are automatically applied, as already set.

OFF-ARM BALANCE: Re-depress the switch to cut the power off. The SPEED, SIZE and QUARTZ LOCK indicators go out, and the stylus force, anti-skating and Q-damping become "zero".

4. New Technology

4-(1) Electro-dynamic Servo Control Tonearm

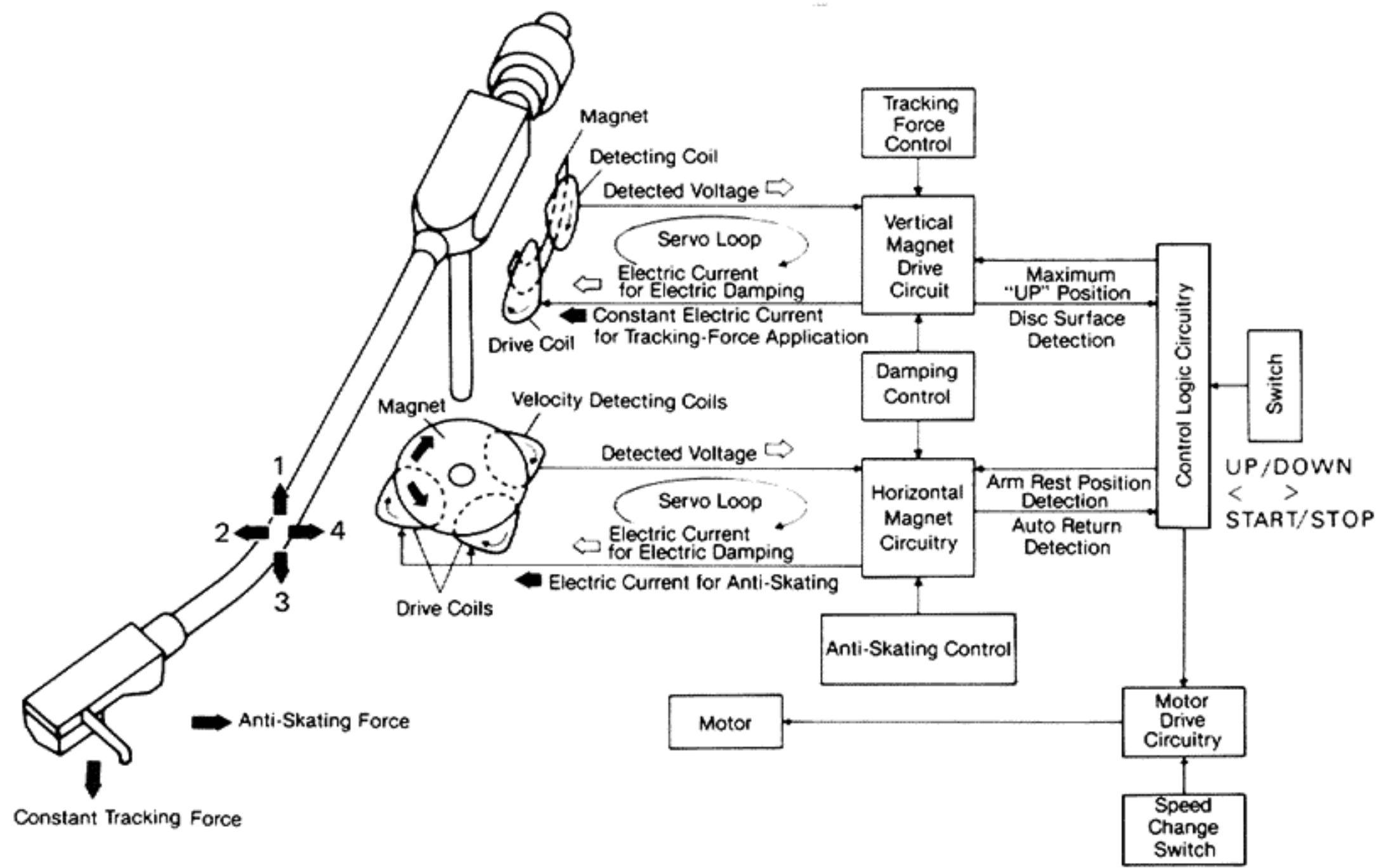
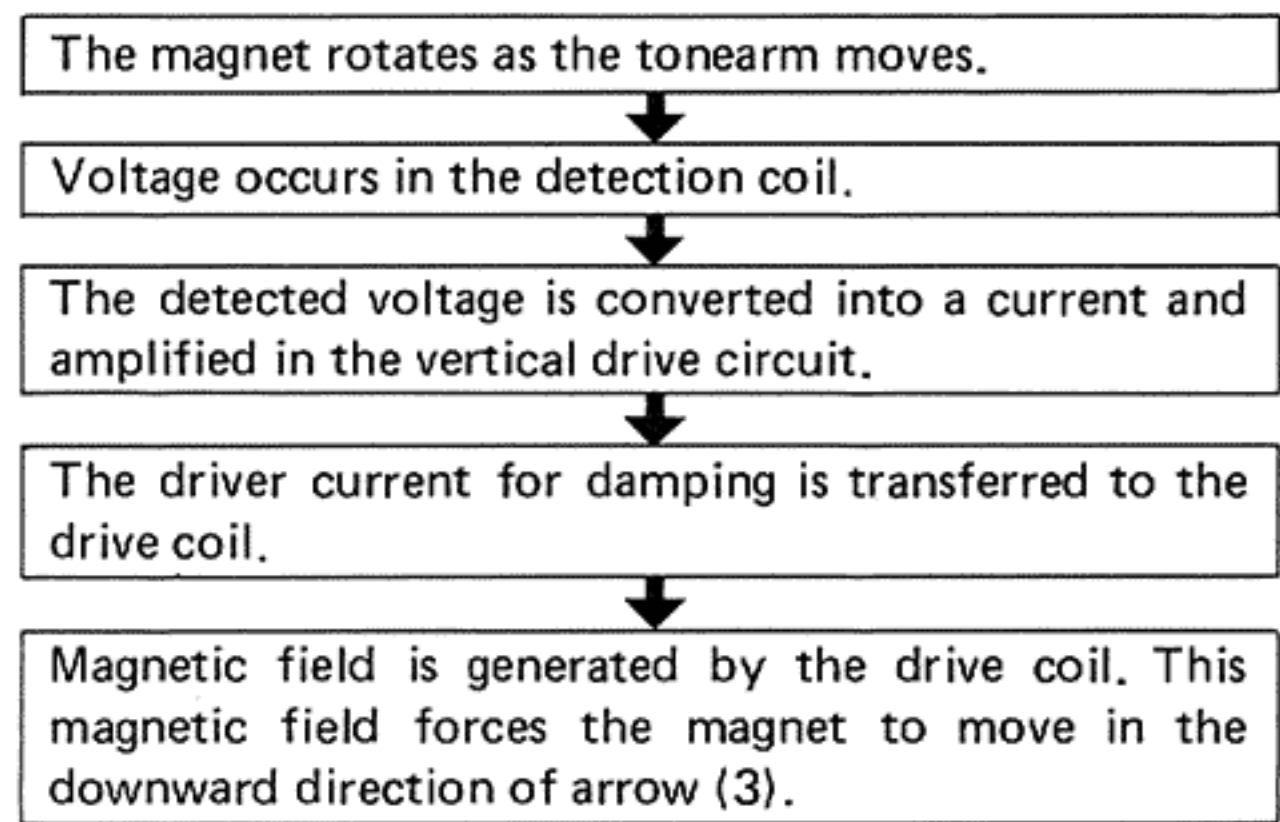


Fig. 3

1. The tonearm is moved by: (1) the effective mass and compliance of the tonearm, (2) warp and/or eccentricity of the record, (3) external vibration, (4) sound pressure, etc.

A. When the tonearm has been vertically moved in the upward direction of arrow 1 (see above diagram).



Thus, the tonearm is controlled and is subject to damping.

B. When the tonearm has been horizontally moved in the direction of arrow (4) (see foregoing diagram) the

tonearm is controlled by the force in the direction of arrow (2) (see foregoing diagram) and is subject to damping the same as in Item A.

C. When the tonearm has been moved in an oblique direction the movement is divided into those in the vertical and horizontal directions and the tonearm is subject to damping in the same manner as in Items A and B.

D. When the tonearm has been moved in the opposite direction to that in Item A or B, the polarity of the detected voltage is reverse and the tonearm is subject to damping in the same manner as in Item A or B.

2. With exception of the damping signal, the current for tracking force and the current for anti-skating are always applied while playing.

3. When the tonearm is "free travelling" current is supplied to neither tracking force nor anti-skating but to the vertical and horizontal drive coils.

Besides, the tonearm smoothly moves at a constant speed, and is subject to an adequate damping force which allows motion to be halted at exactly that point that the switch is released.

4-(2) "Q" Damping in Electro-dynamic Servo Control

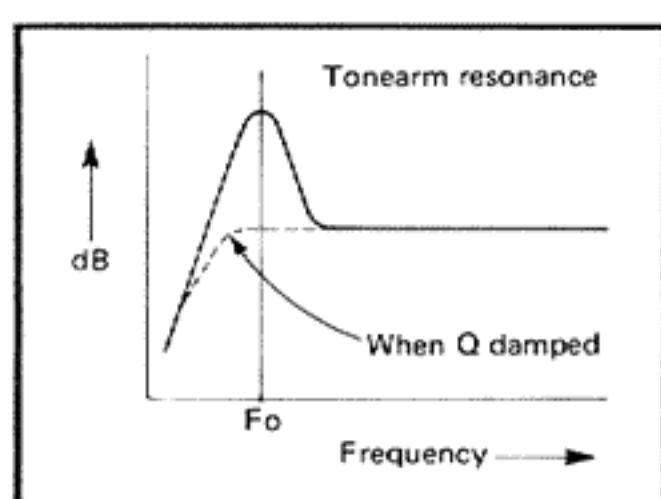


Fig. 4

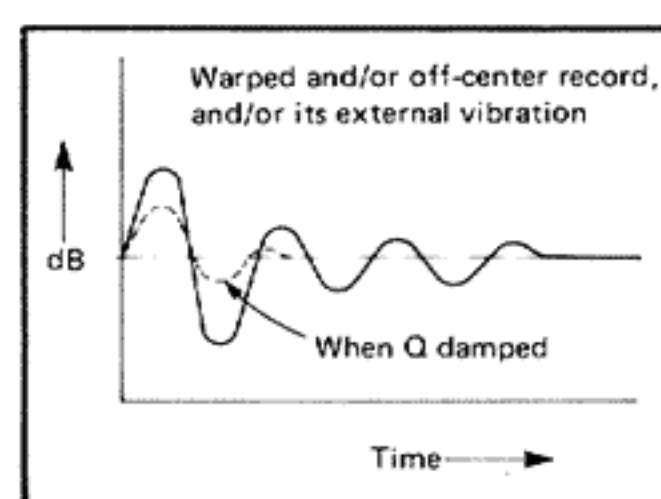


Fig. 5

Any vibrating system utilizing mass and compliance has a resonance point. Therefore, the same applies to the tonearm used in a turntable.

Tonearms now sold on the market possess a resonance frequency at around 5 – 10 Hz. This resonance frequency has a great effect on the reproduction of middle and low frequency ranges. (Refer to Fig. 4.) In addition, warped and/or off-center records, and/or the external vibrations of it make the tonearm vibrate, thus resulting in a modulation of the sound groove signals when the sound groove is being reproduced. (Refer to Fig. 5.)

The oil-damped tonearm employed on the "QL-F6" and the Electro-Dynamic Servo Tonearm employed on the "QL-Y5F" have been developed to solve these problems. The oil-damped tonearm and Electro-Dynamic Servo Tonearm are the same in theory but differ in damping systems. Oil-damped tonearm: Oil viscosity resistance is utilized.

Electro-Dynamic Servo Tonearm: The vibration speed of the tonearm is electrically detected and damped by the operation of the servo loop.

4-(3) Detecting Record-end

In the Electro-Dynamic Servo Tonearm, since the tonearm speed is detected, the record feed pitch can also be electrically detected.

This tonearm is provided with a positional restriction device that detects the record end by using a LED and a phototransistor. Because this device is set, records falling within the standards range can be detected electrically.

4-(4) Applied Tracking Force by Electro-dynamic Servo Control

Conventional tracking force application systems are classified into two types: the static type utilizing the mass of the tonearm and the dynamic type utilizing a spring inside the tonearm.

In the static type, tracking force is applied without mechanical contact, thus it is possible to minimize tracking force error due to record warps, etc. However, the tonearm centroid tends to shift to the headshell side upon application of tracking force, thus resistance to external vibrations is not good.

In the dynamic type, tracking force is applied by a spring or the like after performing "0" balancing, thus the tonearm centroid is always fixed and therefore resistance to external vibrations is high. However, the linearity of the spring or the resistance at the points of contact of the spring produce extended tracking force error. Therefore the dynamic type is generally unused.

In pursuit of non-resonance and non-vibration, JVC has developed the electrical tracking force application system using a coil and a magnet, without mechanical contact, which permits high resistance to external vibrations and low tracking force error. In this way, the mechanically applied tracking force using a spring or the like, has been replaced. QL-Y5F employs such an electrical tracking force application system.

4-(5) Anti-skating Control

Many conventional anti-skating devices (also called skating force cancelers) employ a spring and are mechanical. Therefore, this type of anti-skating device may be likely to transmit frictional resistances and/or external vibrations to the tonearm.

To avoid this problem, the QL-Y5F employs an electrical anti-skating system with a coil and magnet, thus the centripetal force of the tonearm is offset without mechanical contact.

4-(6) Cueing Control

In the Electro-Dynamic Servo Tonearm, even those mechanically operated components have been converted to be electrically operated. Therefore the complex mechanism at the tonearm base has been simplified, thus enabling non-resonance and non-vibration.

4-(7) Lead-in Positioning See page 13.

5. Adjustment Procedures

5-(1) Tonearm Height

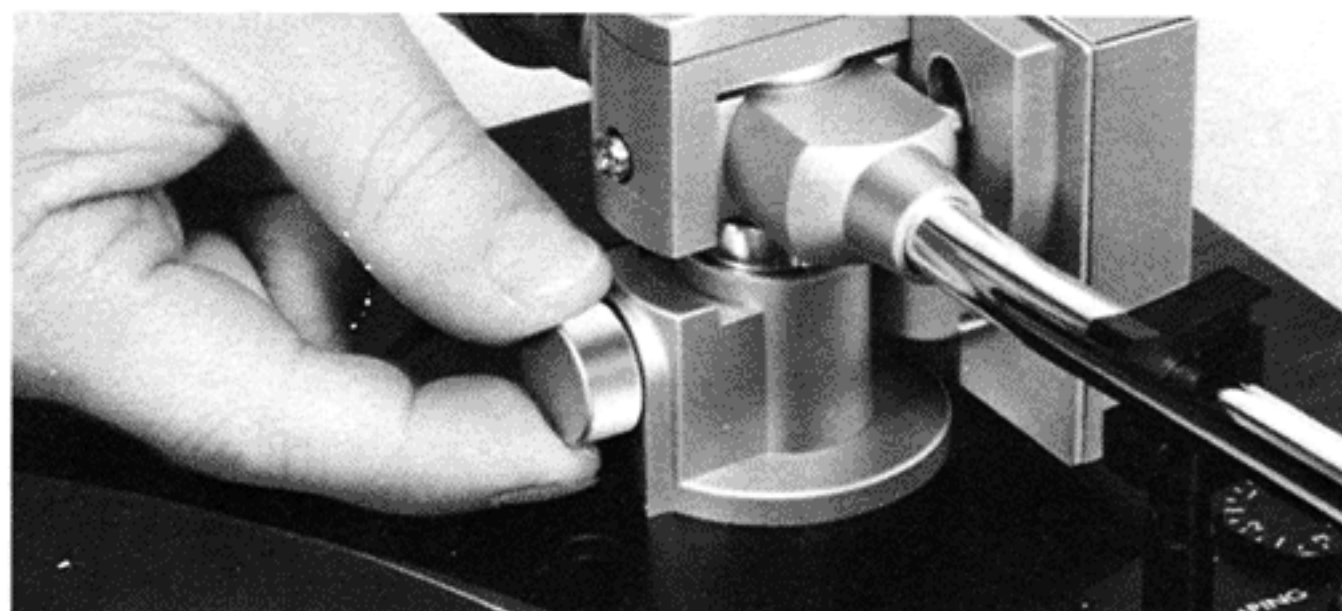


Fig. 6

1. Set the READY switch to "OFF-ARM BALANCE".
2. Remove the clamp.
3. Put a disc record on the platter and move the tonearm onto the record. See if the tonearm is horizontal when a stylus tip is nearly touching to the record surface.
4. Adjust the height by hand by loosening the height/fix knob so that the tonearm is horizontal to the record surface with the stylus tip being nearly touched to the record. Then, fix the knob firmly. (Fig. 6)

5-(2) Cueing (Up/Down) Height

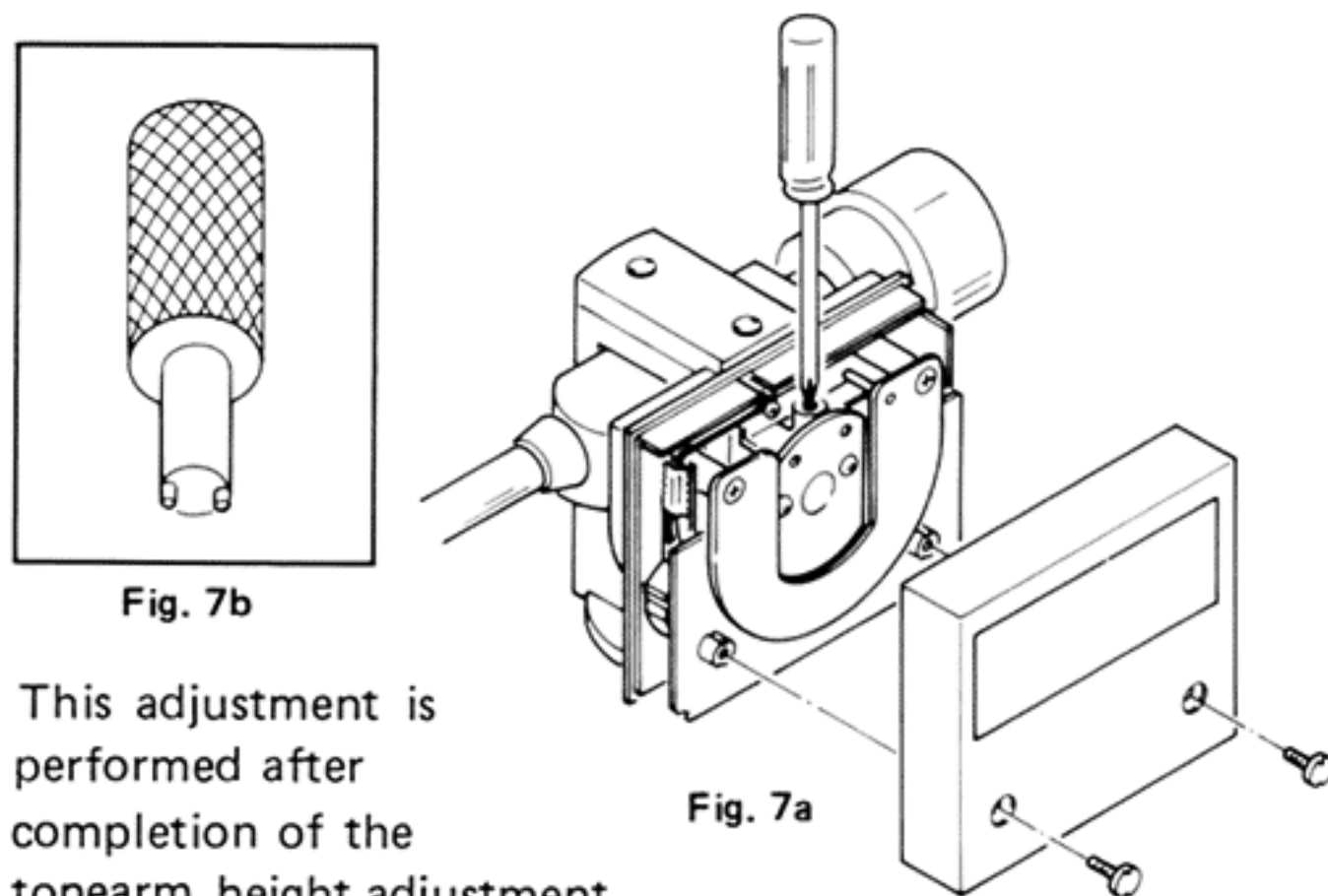


Fig. 7b

Fig. 7a

This adjustment is performed after completion of the tonearm height adjustment.

1. Remove the two screws for the coil cover.
2. Turn the READY switch on, then put the tonearm in the UP position by pressing the "UP/DOWN" switch.
3. Turning the adjusting screw clockwise with a Jewellers screwdriver (as shown in Fig. 7a) causes the stylus tip clearance to increase. The appropriate clearance from the record surface is about 6 mm.

NOTES: 1. If a screwdriver for removing of coil cover is not available, consult your nearest JVC dealer. (Fig. 7b)

2. When mounting the coil cover, be careful not to catch and disconnect the wire with the coil cover.

5-(3) Tracking Force

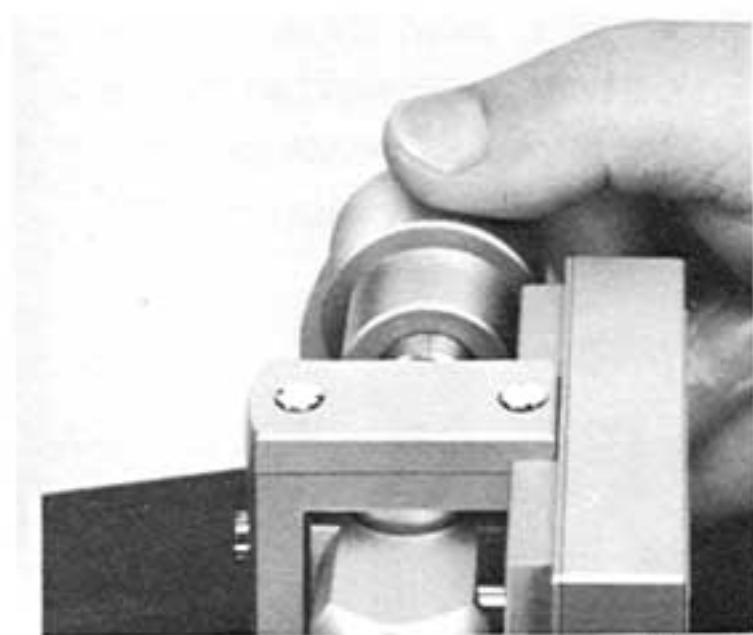


Fig. 8

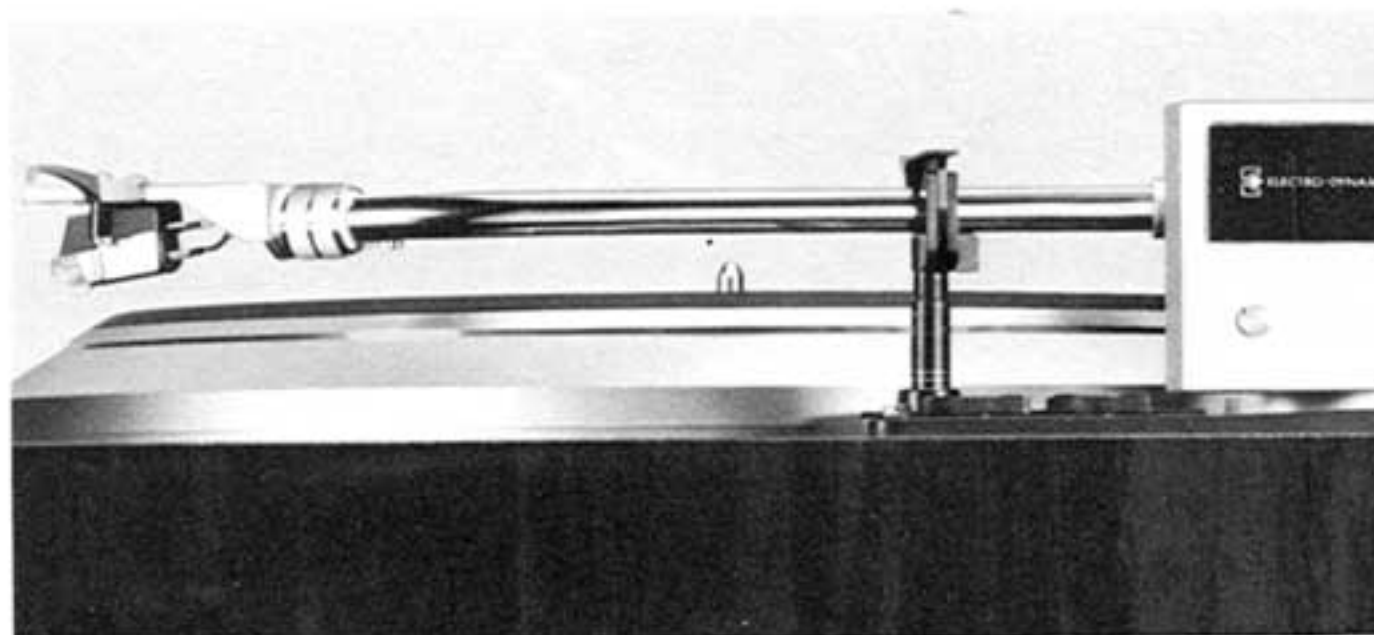


Fig. 9



Fig. 10

1. Place a record on the platter.
2. Remove the stylus protector cover.
3. Release the tonearm clamp.
4. Turn the main weight so that the tonearm maintains a balance with the stylus tip is almost touching to the record. (Fig. 8, 9)

5. Return the tonearm to its rest and clamp it.
6. According to the recommended stylus force of a cartridge to be used, turn the "ANTI-SKATING TRACKING FORCE" knob, then the anti-skating and tracking force is applied electronically. (If stylus force is 2 gram, set the knob to the index "2".) (Fig. 10)

5-(4) "Q" Damping

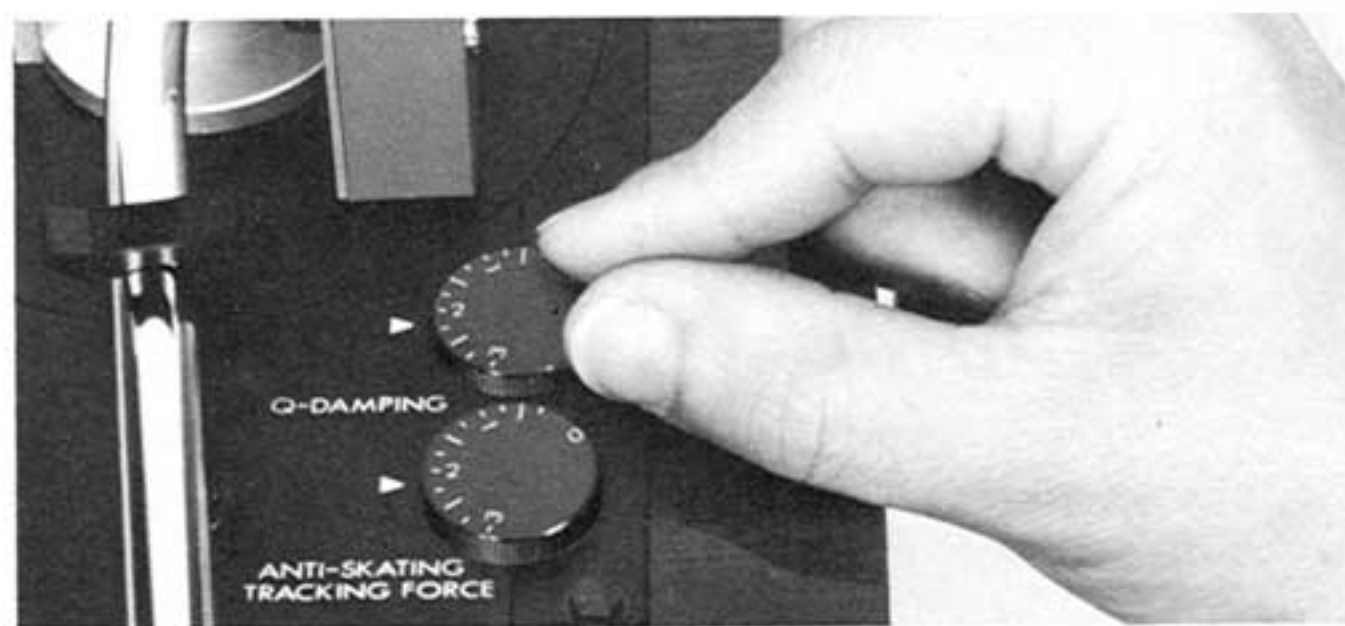


Fig. 11

Turn the Q-DAMPING knob to equal the stylus force. (If stylus force is 2 gram, set the knob to the index of "2".) (Fig. 11)

5-(5) Lead-in

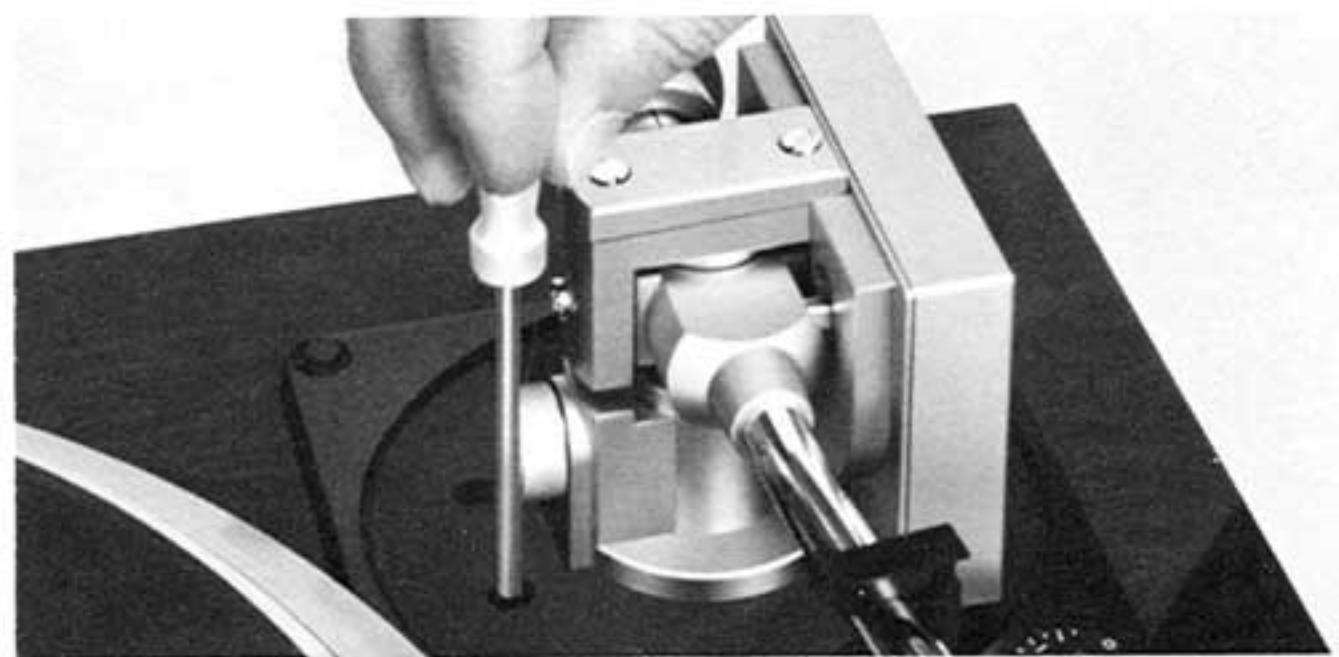


Fig. 12

1. Place a 30 cm record on the platter.
2. Set the SIZE switch to "30" and operate the turntable in automatic play. Confirm if the stylus lead-in position is about 3 to 4 mm inward from the outermost edge of the record disc. If the lead-in position is not in the proper range, turn the adjusting screw with a screwdriver and adjust the lead-in position. (Fig. 12)

Note:

The QL-Y5F for U.S.A. and Canada has a cap covering the hole for the adjusting screw. Remove this cap to make adjustment.

5-(6) Lead-out

First, secure the tonearm to the tonearm rest, and set the RPM to 33.

Next, turn VR806 so that the voltage between TP-1 and TP-8 on the board becomes -14 mV.

5-(7) Motor's Rotation

Since this double servo quartz control turntable is designed to have a wider locking range than the conventional turntable, it is not required to adjust the RPM.

5-(8) Tonearm Off-set Position

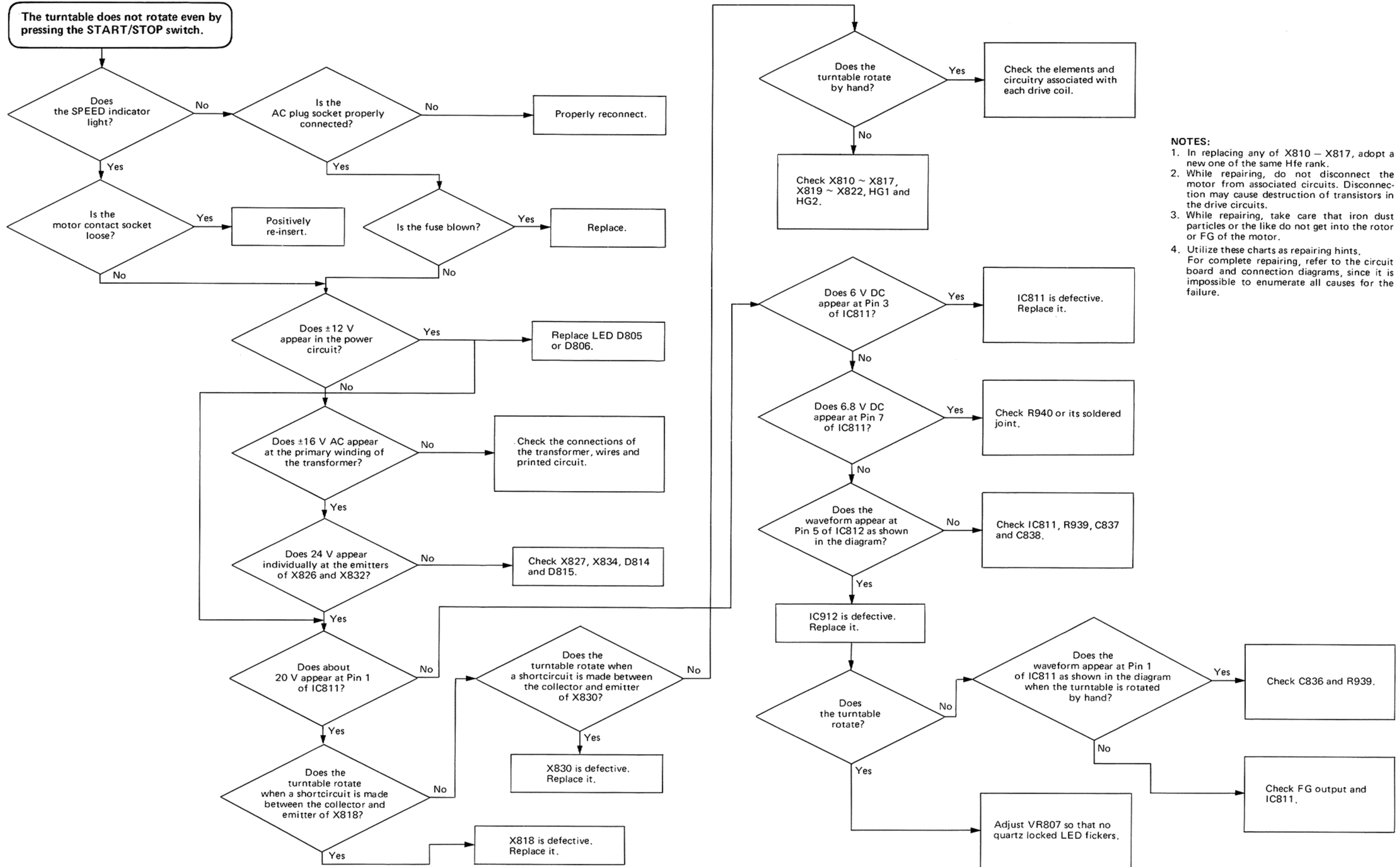
1. Set the VR for tracking force (VR801) to 0, then turn Q damping VR (VR802) fully to the right.
2. Set the voltage between TP-4 and TP-5 to 0 V by turning VR804 (with the tonearm in the DOWN position).
3. Set the voltage between TP-2 and TP-3 to 0 V by turning VR805 (with the tonearm secured to the arm rest in the "UP" position).

Note:

Allowable range of "0 V" is $\pm 5 \sim 10$ mV.

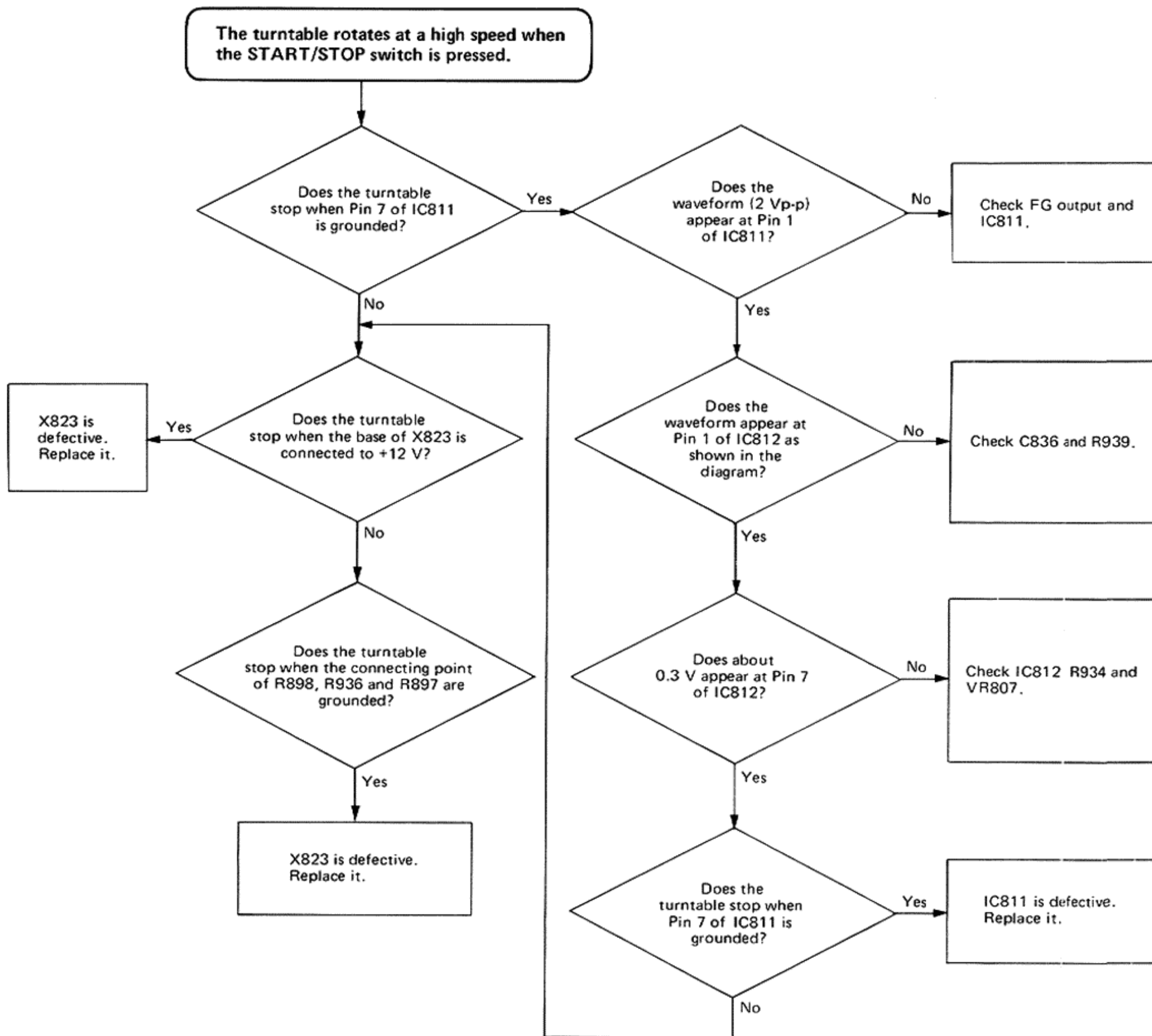
6. Troubleshooting Charts

6-(1) Turntable does not rotate



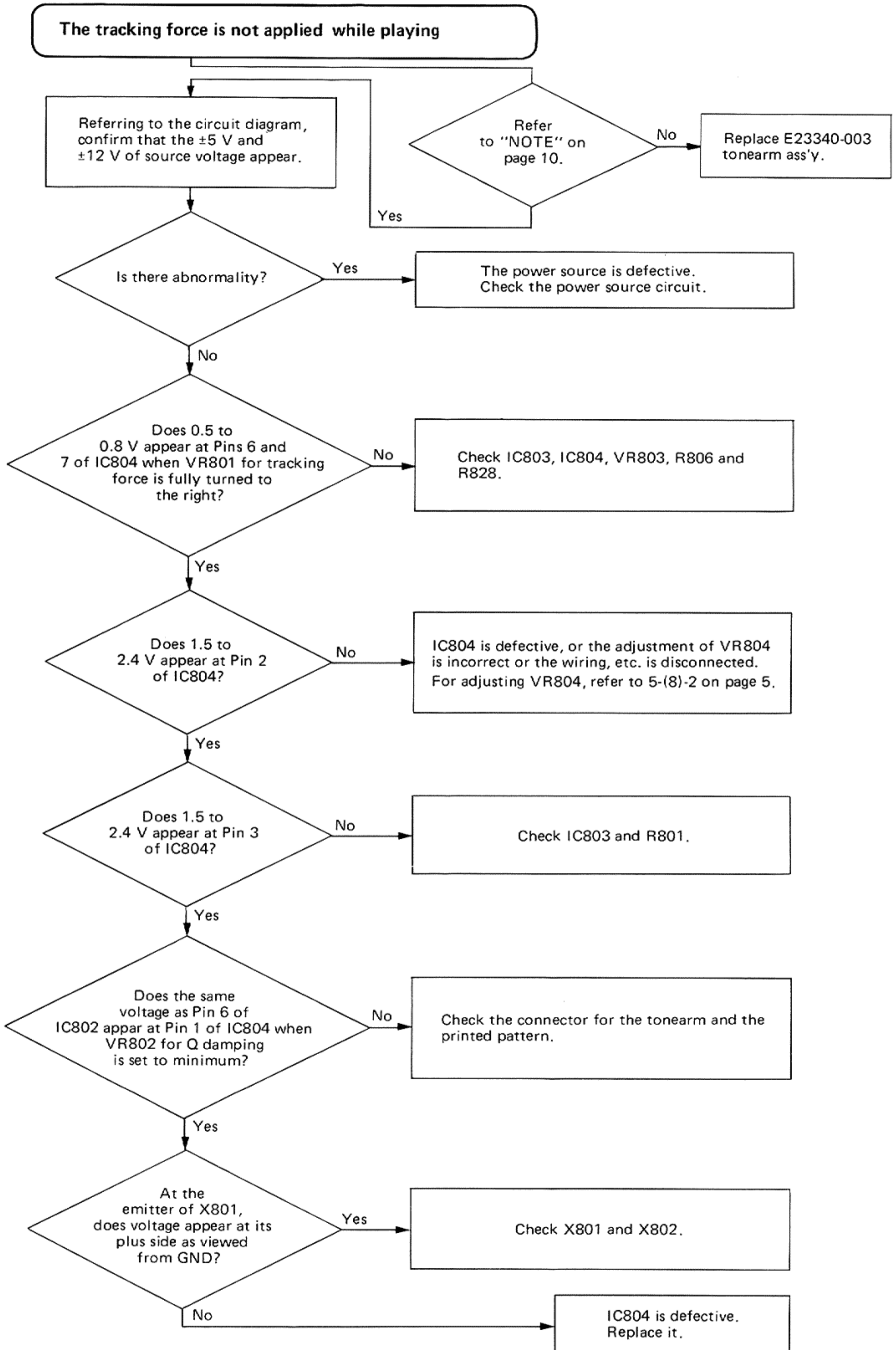
- NOTES:**
1. In replacing any of X810 – X817, adopt a new one of the same Hfe rank.
 2. While repairing, do not disconnect the motor from associated circuits. Disconnection may cause destruction of transistors in the drive circuits.
 3. While repairing, take care that iron dust particles or the like do not get into the rotor or FG of the motor.
 4. Utilize these charts as repairing hints. For complete repairing, refer to the circuit board and connection diagrams, since it is impossible to enumerate all causes for the failure.

6-(2) Turntable rotates at high speed

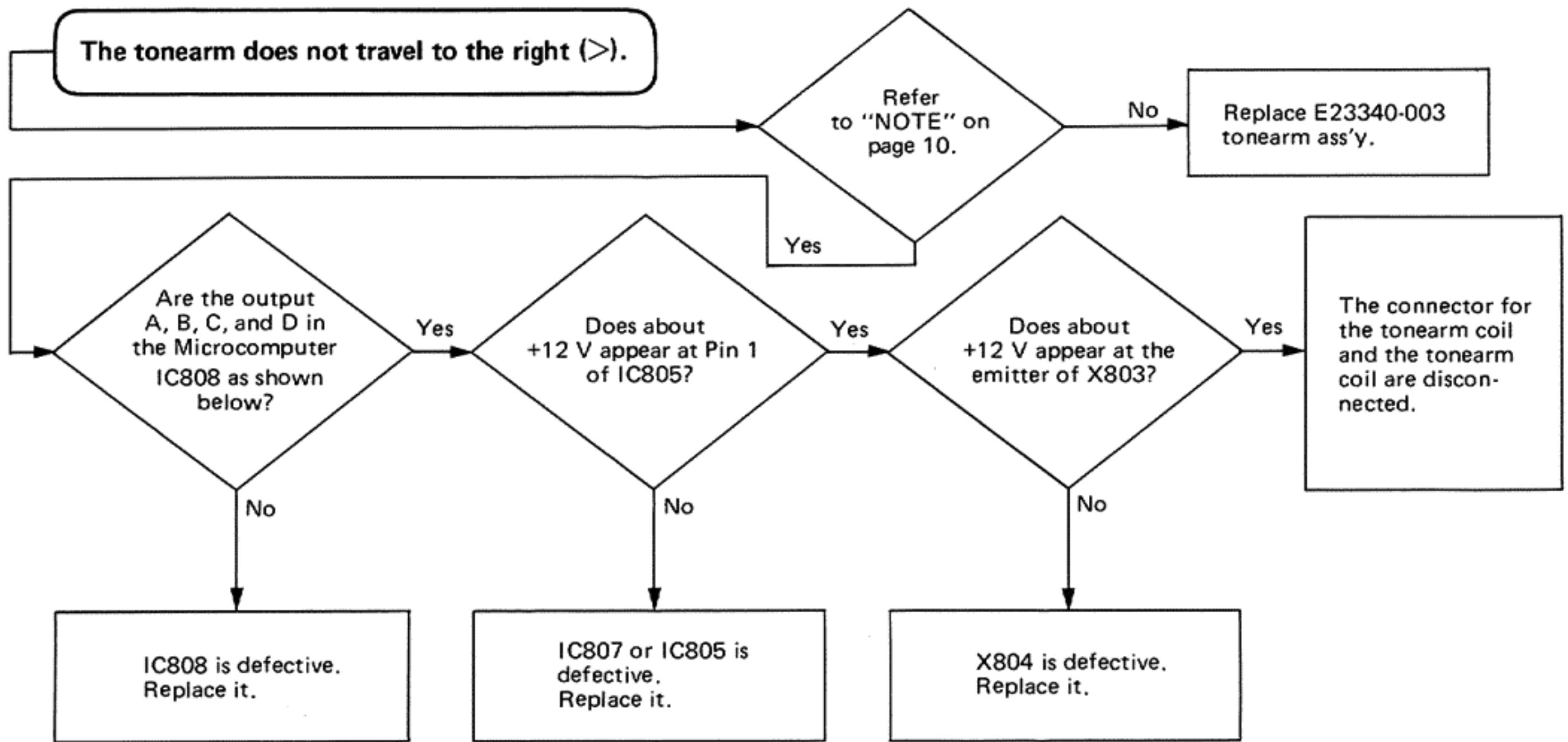


NOTE: While repairing, do not disconnect the motor from associated circuits. Disconnection may cause destruction of transistors in the drive circuits.

6-(3) No tracking force on play

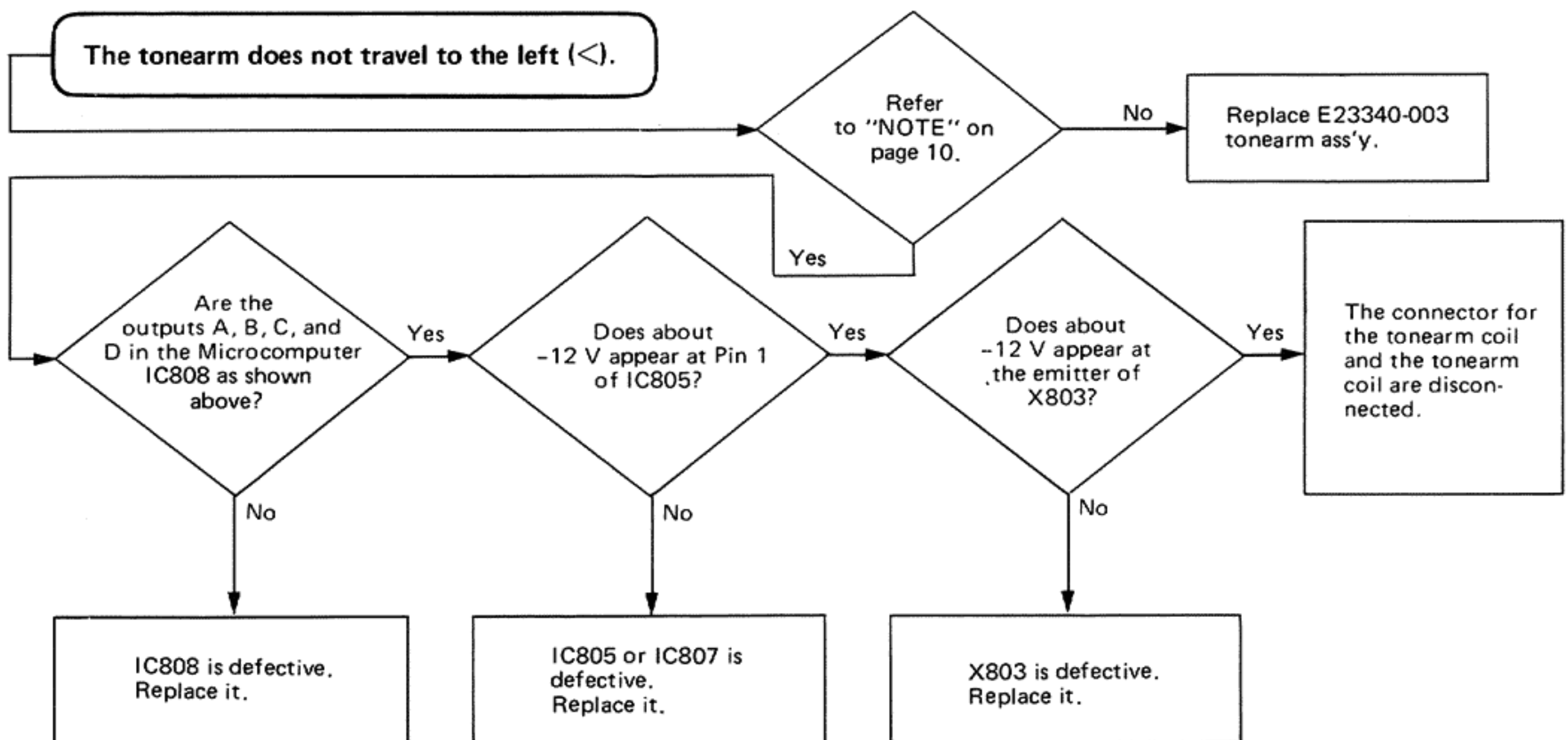


6-(4) Tonearm does not move to right direction

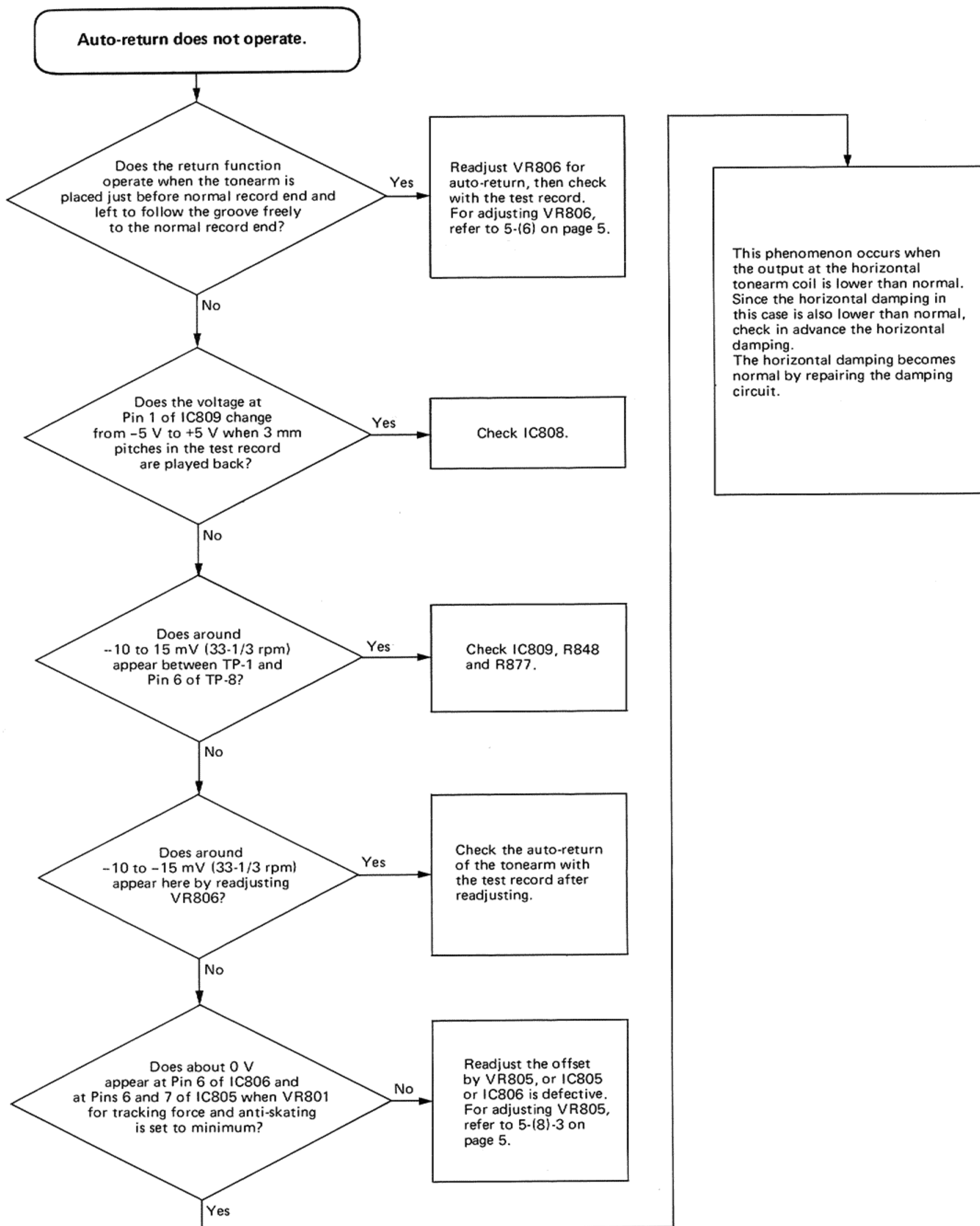


	IC808	Right	Left	UP
A	Pin 10	0 V	0 V	0 V
B	Pin 11	5 V	5 V	5 V
C	Pin 12	0 V	5 V	5 V
D	Pin 13	5 V	0 V	5 V

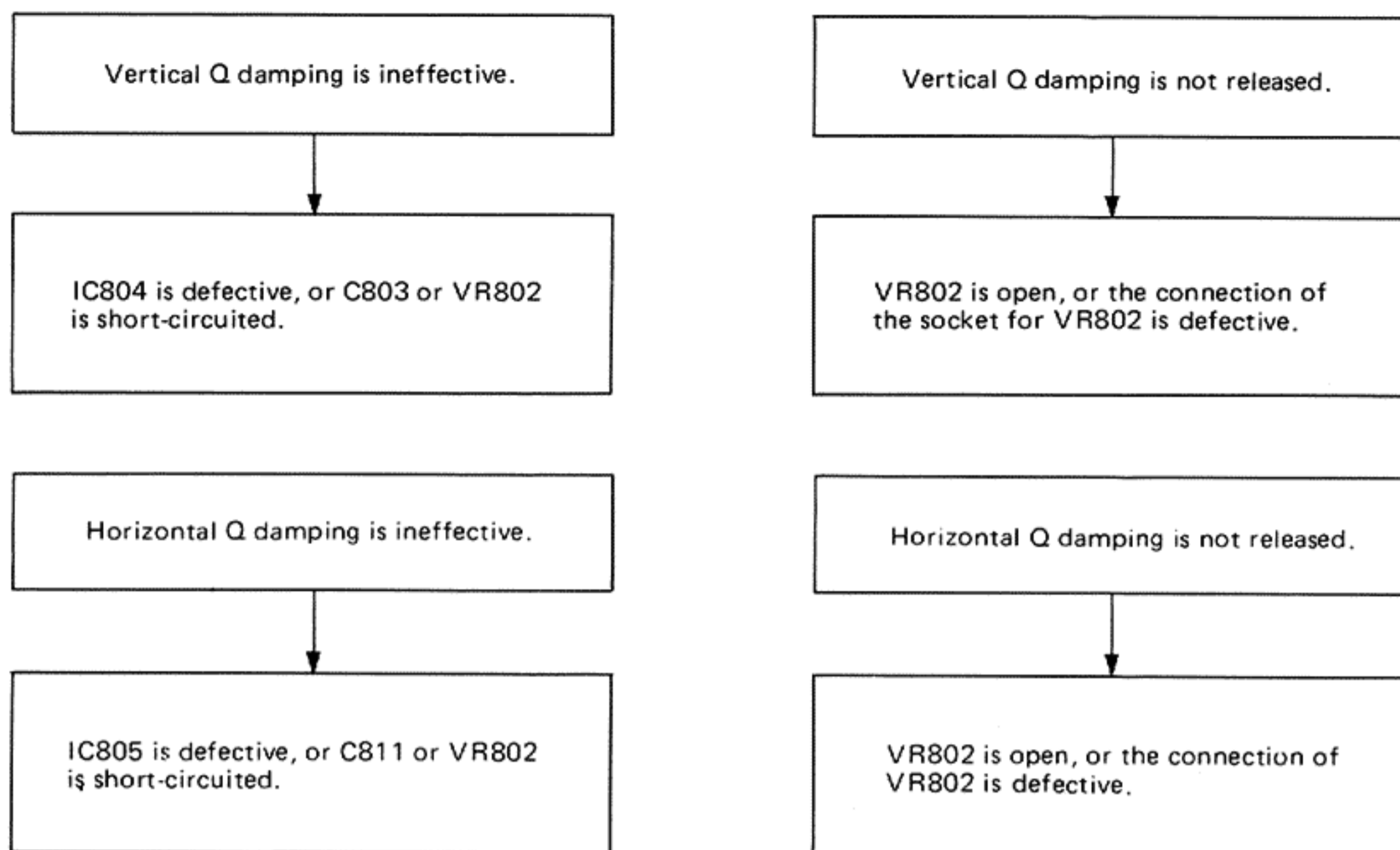
6-(5) Tonearm does not move of left direction



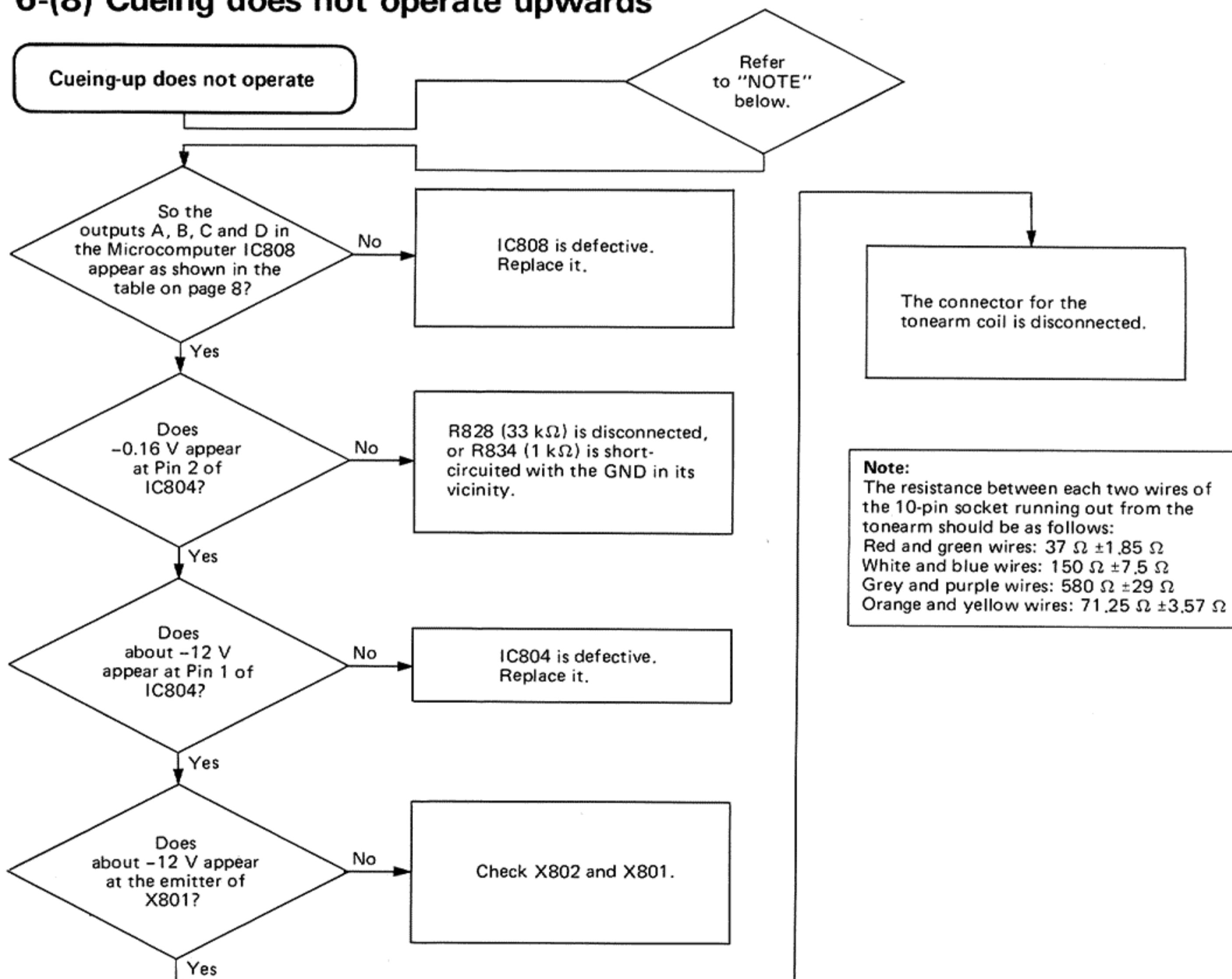
6-(6) Tonearm does not return automatically



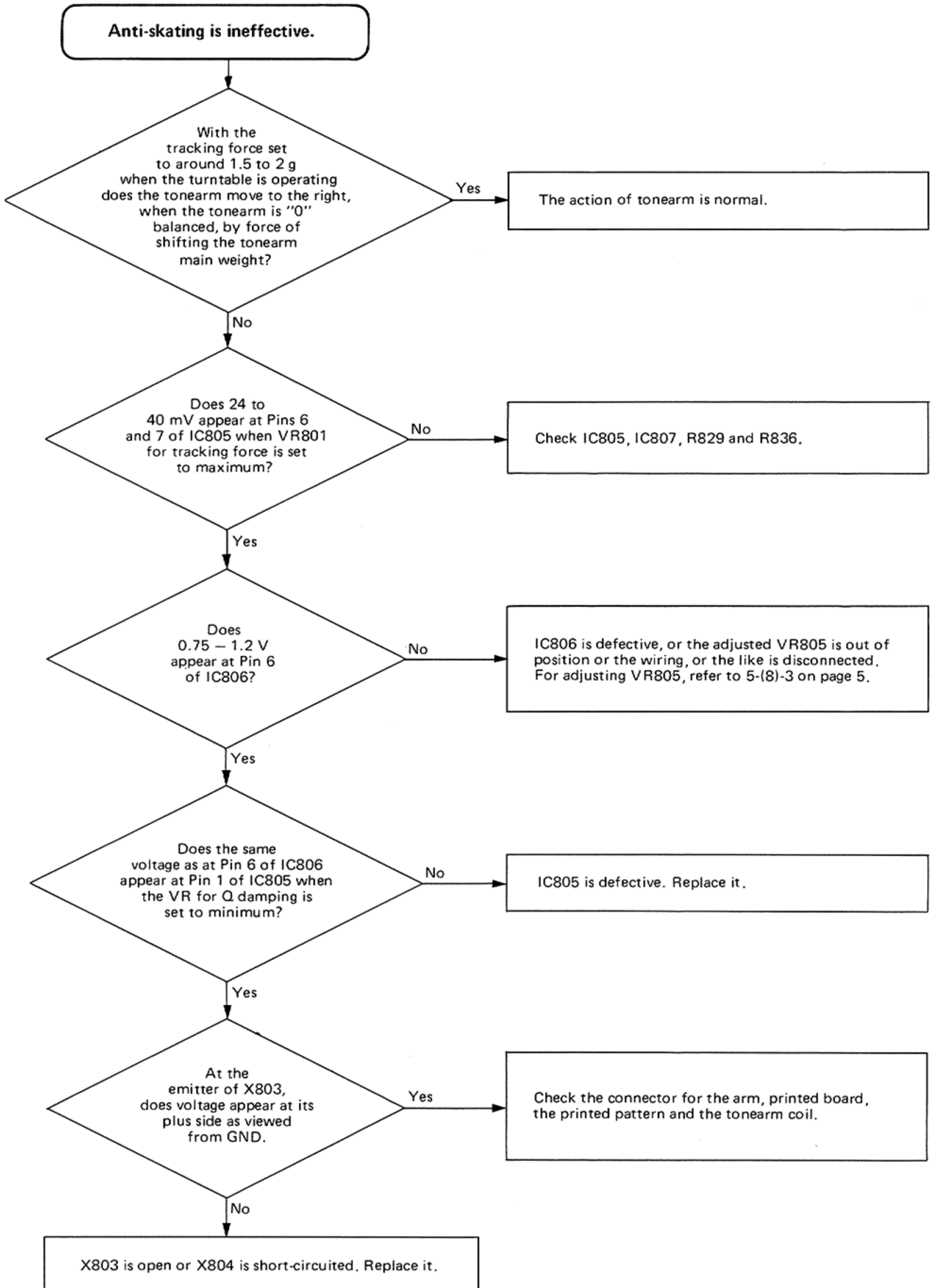
6-(7) No "Q" damping effects



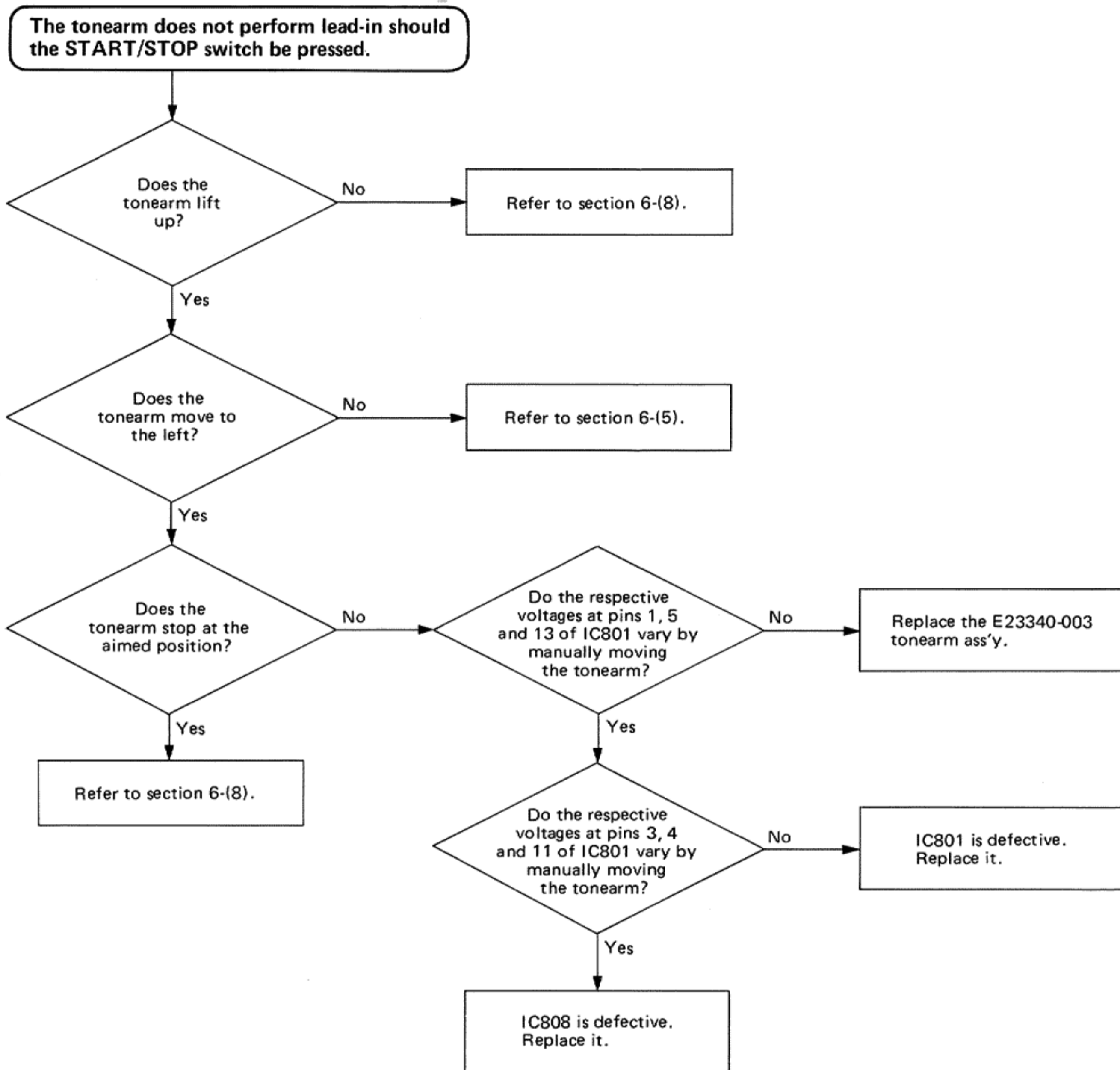
6-(8) Cueing does not operate upwards



6-(9) No anti-skating effects



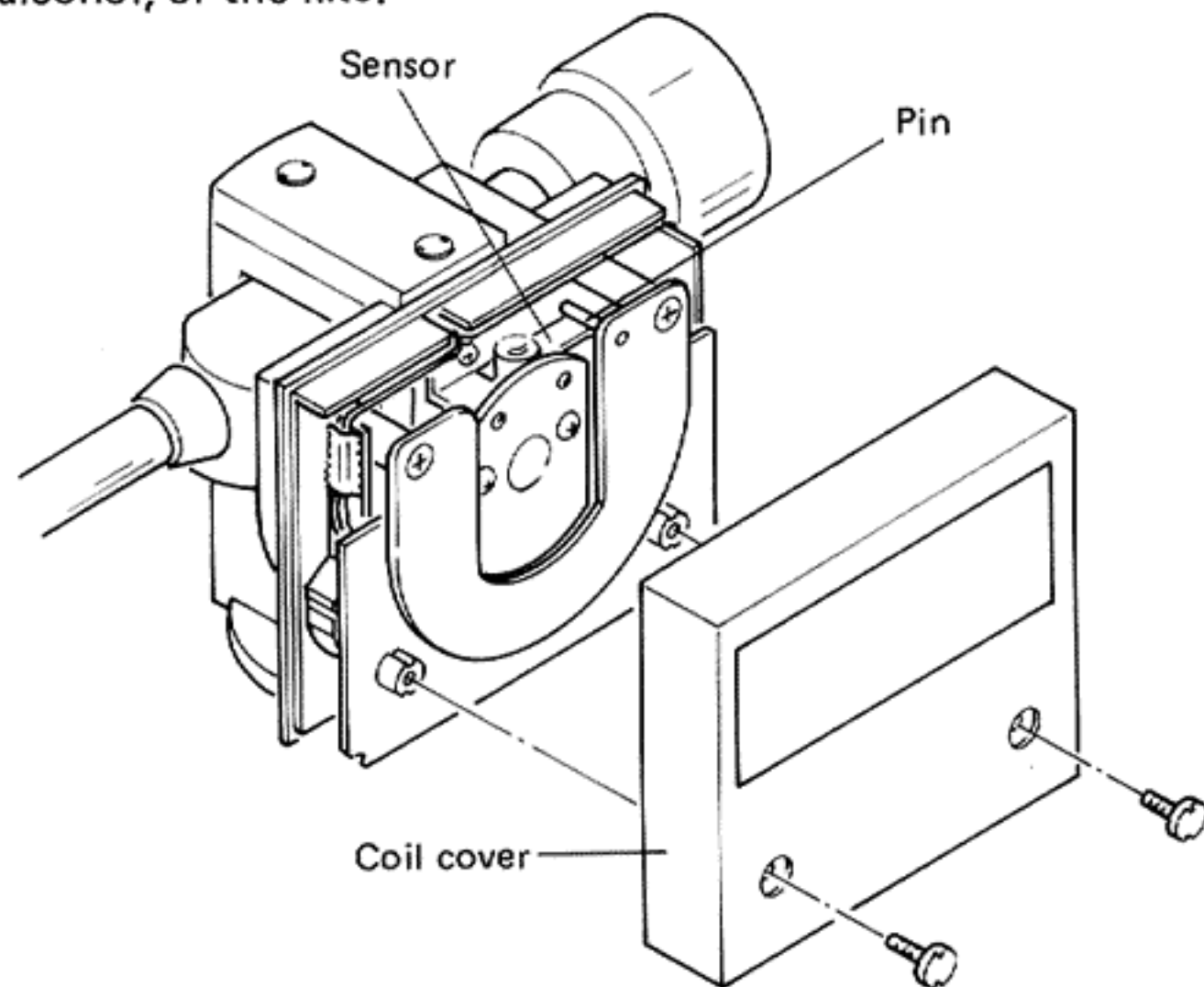
6-(10) Lead-in is not preformed



6-(11) On the Tonearm UP Sensor

When the tonearm remains at the UP position and does not move to the left and right (at the states of lead-in, lead-out, "<", ">"), the continuity failure of the UP sensor (given below) other than the IC failure, the coil disconnection, etc. may cause this.

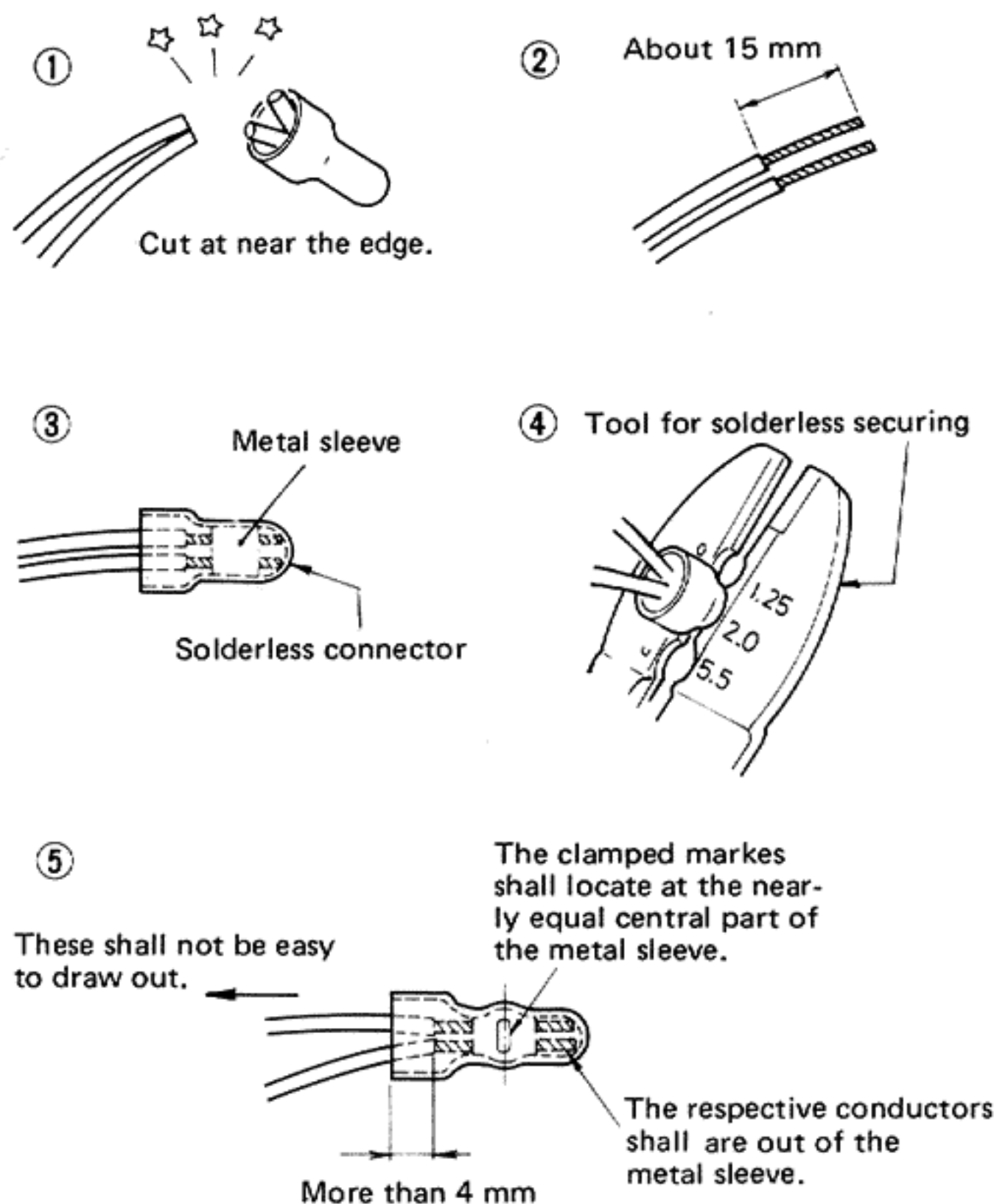
When the continuity between the black and brown wires of the 10-pin socket running out from the tonearm is checked with a tester (ON at UP, OFF at DOWN), when the continuity fails, remove the coil cover, then clean the connecting section between the sensor and pin with a cloth containing alcohol, or the like.



4-(7) Lead-in Positioning

The lead-in positioning is performed by the microcomputer (IC808). The position (rotating angle) of the tonearm in motion is detected by reading the address (001, 010 ... etc.) in the rotating encoder in unity with the tonearm by using the three LED/phototransistors.

The microcomputer always compares the position of the tonearm in motion and the designated lead-in position, stops the tonearm motion, and issues the command to lower the stylus on the record surface. In addition, this microcomputer determines the operating position of the tonearm rest switch and the starting position of lead-out as well.



How to handle the solderless connector (for USA and Canada only)

In this turntable, a solderless connector is used to connect the power cord with the primary lead wire of the power transformer.

When it is unavoidable to replace this connector for replacement of the power transformer, or the like, positively perform the replacement in accordance with the following procedure to avoid dangers.

- **Connector part number**
E03830-001 (Assembly diagram No. 43)
- **Tools**
Do not use those (small cutting pliers, etc.) other than regular tools.
- **Replacement**
 1. Cut both the power cord and the primary lead wire at near the edge of the connector to be replaced.
NOTE: Do not re-use the used connector.
 2. Peel off the coverings so that the respective conductor tops appear by about 15 mm.
NOTE: In the case of stranded wires, twist each wire.
 3. Adjust the tips of the power cord and the primary lead wire with each other, then securely insert them into the connector.
 4. Secure the nearly equal central part of the metal sleeve with the second concave (2.0) of the tool for solderless securing as shown on the left.
NOTE: Perform a complete securing.
 5. After solderless securing, check the following four points shown ⑤.

8. Exploded Views and Parts List

8-(1) Platter and Cabinet

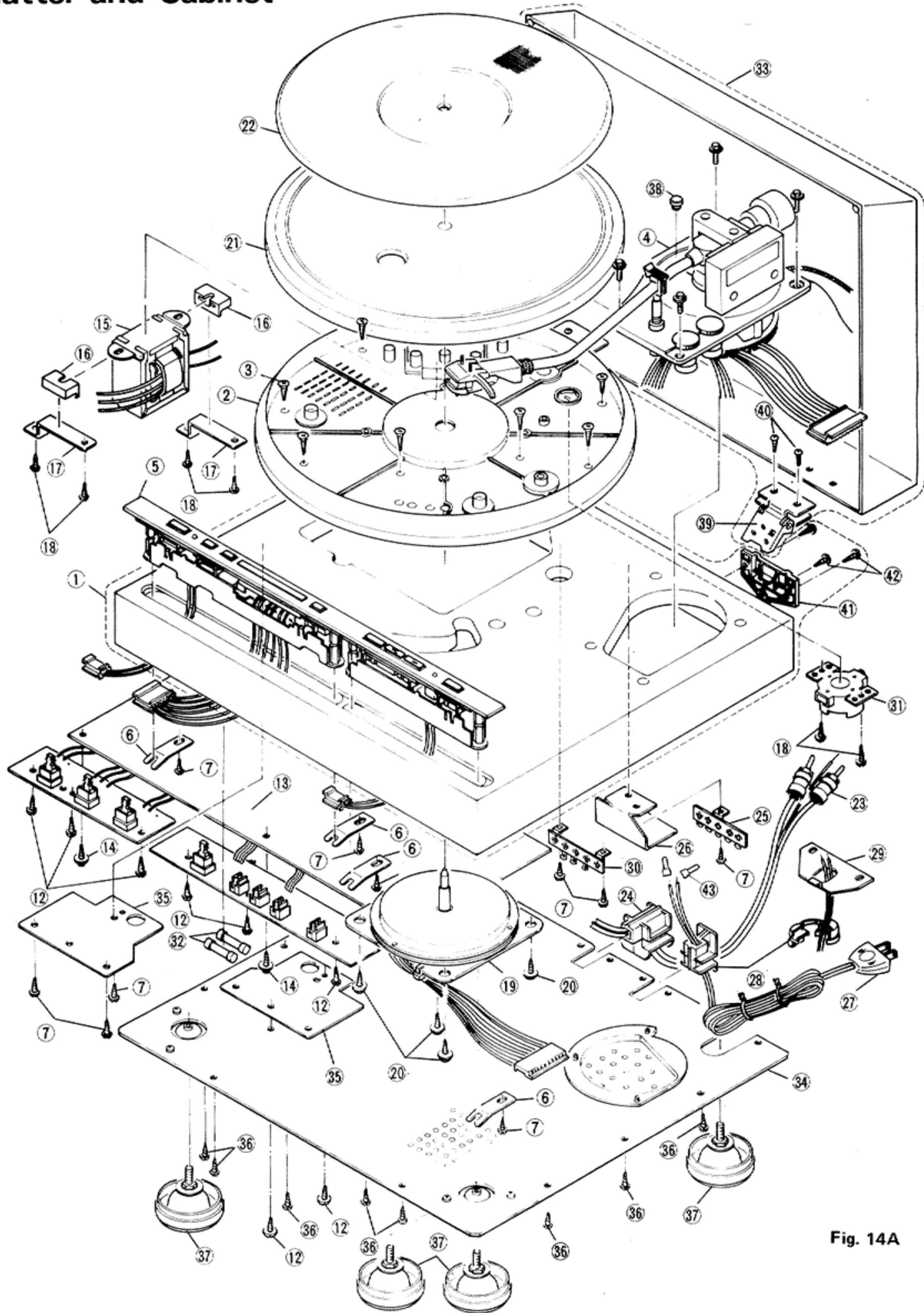


Fig. 14A

Caution:
When removing the motor base or tonearm ensure positive contact with the tonearm base as shown in the right, Fig. 14B, and then secure.

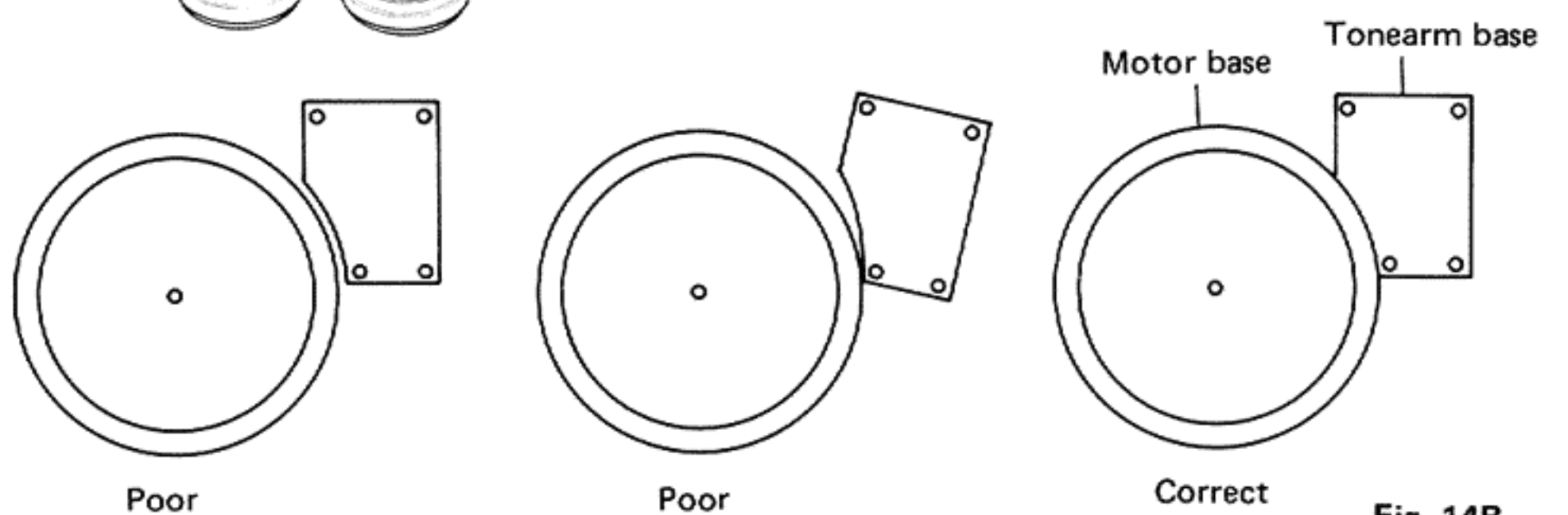









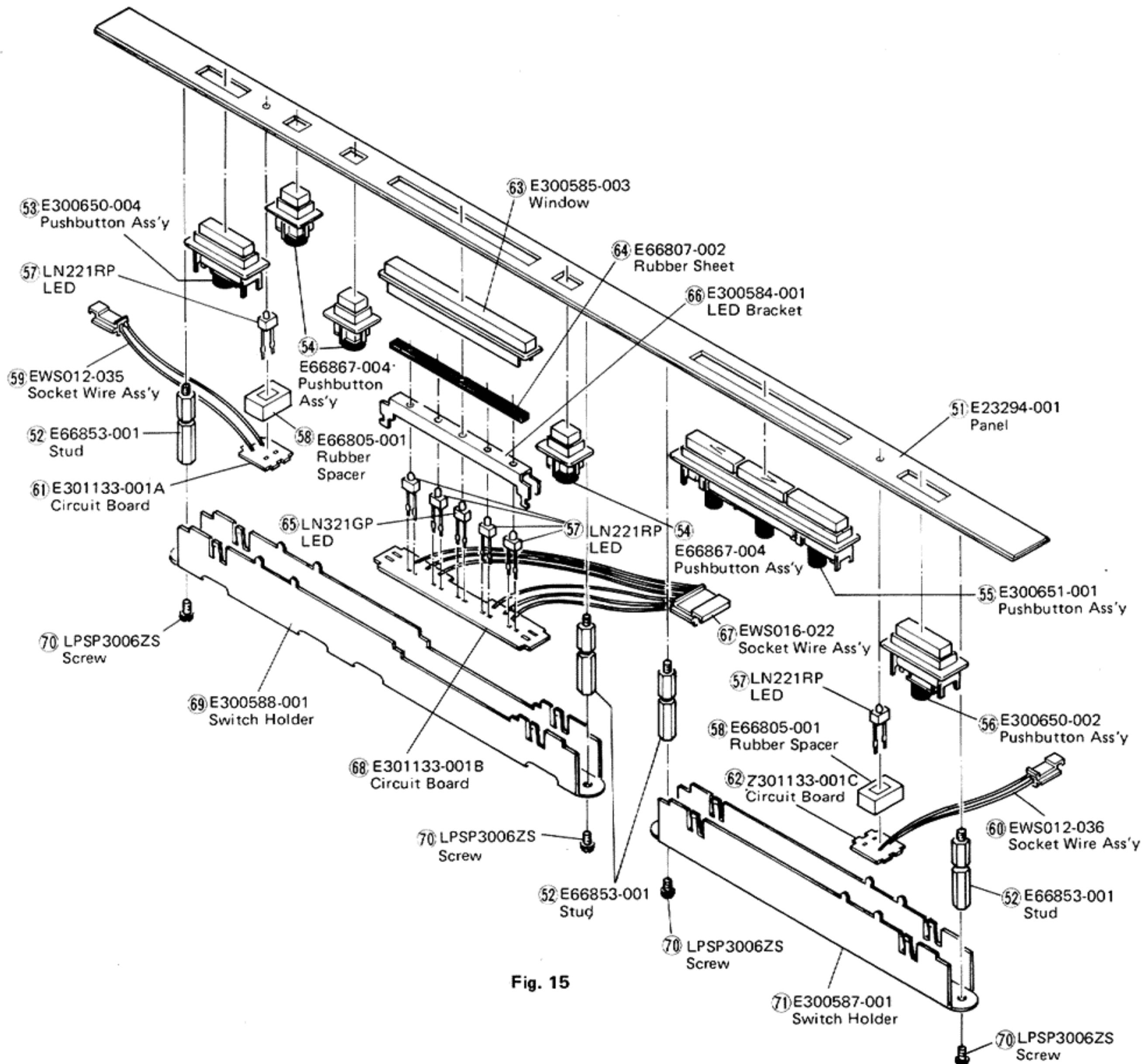
Fig. 14B

Item No.	Part Number	Rating	Description
1	DL-ED92950		Cabinet Ass'y
2	E10405-003		Base
3	SHSA3014N		Screw
4	See page 24, Sect. 13		Tonearm Ass'y
6	E66810-001		Holder
7	SBSA3012Z		Screw
12	SBSB3008Z		Screw
13	See page 24, Sect. 13		P.C. Board Add'y
14	GBSB3008Z		Screw
15	See page 24, Sect. 13		Power Transformer 
16	E61824-002		Cushion
17	E66885-001		Transformer Plate
18	E65921-003		Screw
19	M938Q		Motor Ass'y
20	E65922-005		Screw
21	E23112-002		Turntable
22	E23326-003		Turntable Covering
23	E03724-002G		Signal Cord
24	A27355		Cord Stopper
25	QML0002-051		Lug Strip Ass'y

Item No.	Part Number	Rating	Description.
26	E60090-004		Shield Cover
27	See page 24, Sect. 13		Power Cord 
28	See page 24, Sect. 13		Strain Relief
29	See page 24, Sect. 13		Bracket
30	See page 24, Sect. 13		Lug Strip Ass'y 
31	See page 24, Sect. 13		Voltage Selector 
32	See page 24, Sect. 13		Fuse 
33	E35263-001		Dust Cover Ass'y
34	See page 24, Sect. 13		Bottom Cover Ass'y
35	See page 24, Sect. 13		Barrier Plate
36	MRSP2713M		Screw
37	See page 24, Sect. 13		Foot Ass'y
38	See page 24, Sect. 13		Mask Cap
39	E61992-003		Hinge Ass'y
40	SDSP3008M		Screw
41	E65588-001		Lock Plate
42	SBSA3016M		Screw
43	See page 24, Sect. 13		Connector 

 : Safety parts

8-(2) Front Panel Ass'y



8-(3) Tonearm Ass'y

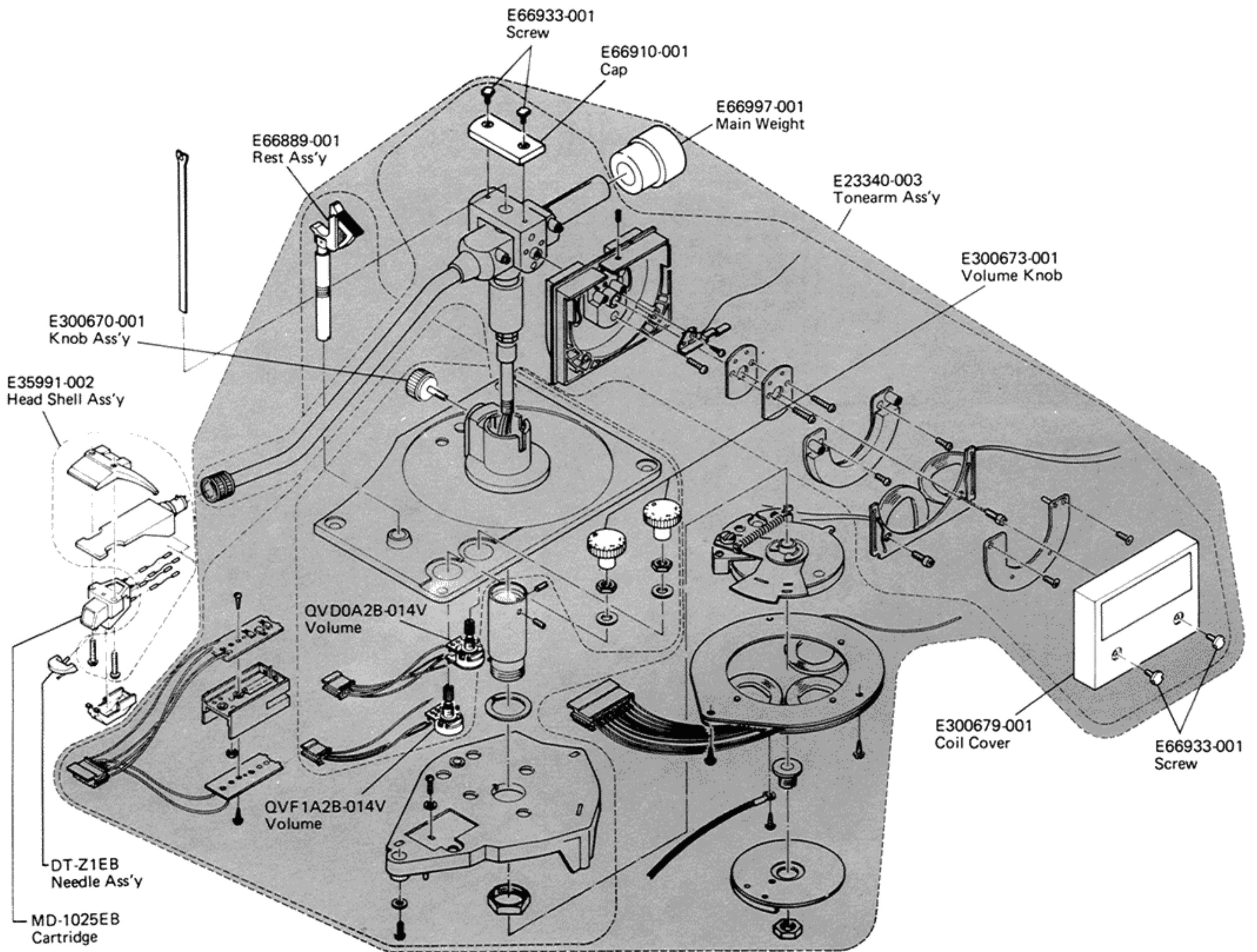


Fig. 16

Caution:
Some part numbers and names are not on the list this is because it is difficult to take them apart and repair them.

The respective models for U.S.A., Canada and U.K. are not supplied with the cartridge (MD-1025EB) and needle ass'y (DT-Z1EB).

Transistors

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X801	2SD325(E)	10 W	8 MHz	Silicon	Sanyo
X802	2SB511(E)	"	"	"	"
X803	2SD571(L,K)	0.8 W	110 MHz	"	NEC
X804	2SB605(K,L)	"	120 MHz	"	"
X805	2SC945A(P,Q)	0.25 W	250 MHz	"	"
X806	2SA733A(P,Q)	"	180 MHz	"	"
X807	2SC945A(P,Q)	"	250 MHz	"	"
X809	2SC945A(P,Q)	"	"	"	"
X810	2SD794(P,Q)	10 W	55 MHz	"	"
X811	2SA733A(P,Q)	0.25 W	180 MHz	"	"
X812	2SA733A(P,Q)	"	"	"	"
X813	2SD794(P,Q)	10 W	55 MHz	"	"
X814	2SD794(P,Q)	"	"	"	"
X815	2SA733A(P,Q)	0.25 W	180 MHz	"	"
X816	2SA733A(P,Q)	"	"	"	"
X817	2SD794(P,Q)	10 W	55 MHz	"	"
X818	2SC945A(P,Q)	0.25 W	250 MHz	"	"
X819	2SB605(K,L)	0.8 W	120 MHz	"	"
X820	2SB605(K,L)	"	"	"	"
X821	2SB605(K,L)	"	"	"	"
X822	2SB605(K,L)	"	"	"	"
X823	2SA733A(P,K)	0.25 W	180 MHz	"	"
X824	2SB605(K,L)	0.8 W	120 MHz	"	"
X826	2SB507V(E)	30 W	8 MHz	"	Sanyo
X827	2SB560(E)	0.75 W	100 MHz	"	"
X828	2SA733A(P,Q)	0.25 W	180 MHz	"	NEC
X829	2SC945A(P,Q)	"	250 MHz	"	"
X830	2SD571(L,K)	0.8 W	110 MHz	"	"
X832	2SD313V(E)	30 W	8 MHz	"	Sanyo
X833	2SC945A(P,Q)	0.25 W	250 MHz	"	NEC
X834	2SD438(E)	0.75 W	100 MHz	"	"
X835	2SC945A(P,Q)	0.25 W	250 MHz	"	"
X836	2SC2259(F,G)	0.4 W	150 MHz	"	Fujitsu
X837	2SC945A(P,Q)	0.25 W	250 MHz	"	NEC

Integrated Circuits

Item No.	Part Number	Rating		Description	
		Pc			Maker
IC801	TC4071BP	0.5 W	IC		Hitachi
IC802	HA17741PS				
IC803	TC4052BP				
IC804	NJM4558D				
IC805	NJM4558D				
IC806	UPC154A	0.5 W	IC		NEC
IC807	TC4052BP				
IC808	UPD554C-033				
IC809	NJM4558D				
IC810	TC4016BP				
IC811	NJM4558D-D				JRC
IC812	VC4046				
IC813	NJM78L08A				JRC

Diodes

Item No.	Part Number	Rating		Description	
					Maker
D810	1S2076-31			Silicon	Hitachi
D811	1S2076-31				
D812	VD1220				
D813	1S2076-31				
D814	RD5, 6EB3				
D815	RD5, 6EB3			Silicon	Hitachi
D816	1S2076-31				
D817	1S2076-31				
D818	ESAB03-02A				

Coil

Item No.	Part Number	Rating	Description
	E03062-44		OSC Coil (400 kHz ±10 %)

Capacitors

Item No.	Part Number	Rating		Description
C801	QFM81HK-473	0.047 μF	50 V	Mylar
C802	QFM81HK-104	0.1 μF	"	"
C803	QE20046-105	1 μF	"	Electrolytic
C804	QET51HR-106H	10 μF	"	"
C805	QFM81HK-472	4700 pF	"	Mylar
C806	QFM81HK-104	0.1 μF	"	"
C808	QFM81HK-473	0.047 μF	"	"
C809	QFM81HK-473	"	"	"
C811	QFM81HK-103	0.01 μF	"	"
C812	QFM81HK-473	0.047 μF	"	"
C813	QFM81HK-473	"	"	"
C814	ECEA1EN330S	33 μF	25 V	Electrolytic
C815	QET51ER-106H	10 μF	"	"
C816	QCF21HP-103	0.01 μF	50 V	Ceramic
C817	QET51ER-106H	10 μF	25 V	Electrolytic
C818	QET51HR-475H	4.7 μF	50 V	"
C819	QET51CR-476H	47 μF	16 V	"
C820	QET51CR-476H	"	"	"
C821	QET51CR-476H	"	"	"
C822	QET51CR-476H	"	"	"
C823	QCF21HP-102	1000 pF	50 V	Ceramic
C824	QCF21HP-102	"	"	"
C825	QET51HR-476H	47 μF	"	Electrolytic
C826	QET51HR-476H	"	"	"
C827	QET51VR-108H	1000 μF	35 V	"
C828	QET51VR-108H	"	"	"
C829	QET51VR-108H	"	"	"
C830	QET51VR-108H	"	"	"
C831	QCE22HP-103	0.01 μF	500 V	Ceramic
C832	QCF21HP-223	0.022 μF	50 V	"
C833	QET51HR-106H	10 μF	"	Electrolytic
C834	QCT26UJ-330	33 pF	"	Ceramic
C835	QCF21HP-102	1000 pF	50 V	"
C836	QFM81HK-104	0.1 μF	"	Mylar
C837	QFM81HK-473	0.047 μF	"	"
C838	QCF21HP-103	0.01 μF	"	Ceramic
C839	QCF21HP-223	0.022 μF	"	"
C840	QCT26UJ-330	33 pF	"	"
C841	QCT26UJ-330	"	"	"
C842	QCF21HP-223	0.022 μF	"	"
C843	QFM81HK-473	0.047 μF	"	Mylar
C844	QCF21HP-103	0.01 μF	"	Ceramic
C845	QET51CR-476H	47 μF	16 V	Electrolytic
C846	ECEA1EN330S	33 μF	25 V	Non Pole Electrolytic
C847	ECEA1EN330S	"	"	"
C848	QCF21HP-103	0.01 μF	50 V	Ceramic
C849	QCF21HP-103	"	"	"
C850	QCF21HP-103	"	"	"

Resistors

Item No.	Part Number	Rating		Description
R801	QRD141J-225SY	2.2M Ω	1/4 W	Carbon
R802	QRD141J-225SY	"	"	"
R803	QRD141J-225SY	"	"	"
R804	QRD141J-331SY	330 Ω	"	"
R805	QRD141J-103SY	10 k Ω	"	"
R806	QRD141J-243SY	24 k Ω	"	"
R807	QRD141J-102SY	1 k Ω	"	"
R808	QRD141J-333SY	33 k Ω	"	"
R809	QRD141J-102SY	1 k Ω	"	"
R810	QRD141J-271SY	270 Ω	"	"
R811	QRD141J-242SY	2.4 k Ω	"	"
R812	QRD141J-433SY	43 k Ω	"	"
R813	QRD141J-242SY	2.4 k Ω	"	"
R815	QRD141J-470SY	47 Ω	"	"
R816	QRD141J-472SY	4.7 k Ω	"	"
R817	QRD141J-472SY	"	"	"
R818	QRD141J-203SY	20 k Ω	"	"
R819	QRD141J-472SY	4.7 k Ω	"	"
R820	QRD141J-103SY	10 k Ω	"	"
R821	QRD129J-2R2	2.2 Ω	1/2 W	"
R822	QRD129J-4R7	4.7 Ω	"	"
R823	QRD141J-472SY	4.7 k Ω	1/4 W	"
R824	QRD141J-103SY	10 k Ω	"	"
R826	QRD141J-333SY	33 k Ω	"	"
R827	QRD141J-563SY	56 k Ω	"	"
R828	QRD141J-103SY	10 k Ω	"	"
R829	QRD141J-224SY	220 k Ω	"	"
R830	QRD141J-103SY	10 k Ω	"	"
R831	QRD141J-202SY	2 k Ω	"	"
R832	QRD141J-202SY	"	"	"
R833	QRD141J-202SY	"	"	"
R834	QRD141J-392SY	3.9 k Ω	"	"
R835	QRD141J-103SY	10 k Ω	"	"
R836	QRD141J-103SY	"	"	"
R837	QRD141J-103SY	"	"	"
R838	QRD141J-822SY	8.2 k Ω	"	"
R839	QRD141J-822SY	"	"	"
R840	QRD141J-822SY	"	"	"
R841	QRD141J-822SY	"	"	"
R842	QRD141J-822SY	"	"	"
R843	QRD141J-822SY	"	"	"
R844	QRD141J-822SY	"	"	"
R845	QRD141J-223SY	22 k Ω	"	"
R846	QRD141J-103SY	10 k Ω	"	"
R847	QRD141J-223SY	22 k Ω	"	"
R848	QRD141J-103SY	10 k Ω	"	"
R849	QRD141J-562SY	5.6 k Ω	"	"
R850	QRD141J-223SY	22 k Ω	"	"
R851	QRD141J-183SY	18 k Ω	"	"
R852	QRD141J-472SY	4.7 k Ω	"	"
R853	QRD141J-103SY	10 k Ω	"	"
R854	QRD141J-103SY	"	"	"
R855	QRD141J-103SY	"	"	"
R856	QRD141J-103SY	"	"	"
R857	QRD141J-472SY	4.7 k Ω	"	"
R858	QRD141J-472SY	"	"	"
R859	QRD141J-473SY	47 k Ω	"	"
R860	QRD141J-183SY	18 k Ω	"	"
R861	QRD141J-223SY	22 k Ω	"	"
R862	QRD141J-223SY	"	"	"
R863	QRD141J-473SY	47 k Ω	"	"
R864	QRD141J-822SY	8.2 k Ω	"	"
R865	QRD141J-472SY	4.7 k Ω	"	"
R866	QRD141J-103SY	10 k Ω	"	"
R867	QRD141J-473SY	47 k Ω	"	"
R868	QRD141J-474SY	470 k Ω	"	"
R869	QRD141J-473SY	47 k Ω	"	"
R870	QRD141J-822SY	8.2 k Ω	"	"
R871	QRD141J-822SY	"	"	"
R872	QRD141J-822SY	"	"	"

Resistors

Item No.	Part Number	Rating		Description
R873	QRD141J-822SY	8.2 k Ω	1/4 W	Carbon
R874	QRD141J-822SY	"	"	"
R875	QRD141J-822SY	"	"	"
R876	QRD141J-822SY	"	"	"
R877	QRD141J-103SY	10 k Ω	"	"
R878	QRD141J-102SY	1 k Ω	"	"
R879	QRD141J-104SY	100 k Ω	"	"
R880	QRD141J-274SY	270 k Ω	"	"
R881	QRD141J-103SY	10 k Ω	"	"
R882	QRD141J-103SY	"	"	"
R883	QRD141J-562SY	5.6 k Ω	"	"
R884	QRD141J-473SY	47 k Ω	"	"
R885	QRD141J-223SY	22 k Ω	"	"
R887	QRX017J-2R7S	2.7 Ω	1 W	Oxide Metal Film
R888	QRD141J-391SY	390 Ω	1/4 W	Carbon
R889	QRD141J-123SY	12 k Ω	"	"
R890	QRD141J-222SY	2.2 k Ω	"	"
R891	QRD141J-392SY	3.9 k Ω	"	"
R892	QRD141J-3R3SY	3.3 Ω	"	"
R893	QRD141J-392SY	3.9 k Ω	"	"
R894	QRD141J-392SY	"	"	"
R895	QRD141J-3R3SY	3.3 Ω	"	"
R896	QRD141J-392SY	3.9 k Ω	"	"
R897	QRD141J-680SY	68 Ω	"	"
R898	QRD141J-122SY	1.2 k Ω	"	"
R899	QRD149J-101S	100 Ω	"	"
R900	QRD141J-332SY	3.3 k Ω	"	"
R901	QRD141J-223SY	22 k Ω	"	"
R902	QRD129J-680	68 Ω	1/2 W	"
R903	QRV144F-3301	33 Ω	1/4 W	CMF
R904	QRD129J-680	68 Ω	1/2 W	Carbon
R905	QRV144F-3001	30 Ω	1/4 W	CMF
R906	QRV144F-3001	"	"	"
R907	QRV144F-3301	33 Ω	"	"
R908	QRD141J-182SY	1.8 k Ω	"	Carbon
R909	QRD141J-182SY	"	"	"
R916	QRD129J-472	4.7 k Ω	1/2 W	"
R917	QRD141J-470SY	47 Ω	1/4 W	"
R918	QRD141J-470SY	"	"	"
R919	QRD129J-472	4.7 k Ω	1/2 W	"
R920	QRD141J-473SY	47 k Ω	1/4 W	"
R921	QRD129J-561	560 Ω	1/2 W	"
R922	QRD129J-561	"	"	"
R923	QRD141J-472SY	4.7 k Ω	1/4 W	"
R924	QRD141J-472SY	"	"	"
R925	QRD141J-472SY	"	"	"
R926	QRD141J-472SY	"	"	"
R927	QRD141J-182SY	1.8 k Ω	"	"
R928	QRD129J-561	560 Ω	1/2 W	"
R929	QRD129J-561	"	"	"
R930	QRD141J-102SY	1 k Ω	1/4 W	"
R931	QRD141J-105SY	1 M Ω	"	"
R932	QRD141J-334SY	330 k Ω	"	"
R933	QRD141J-102SY	1 k Ω	"	"
R934	QRD141J-103SY	10 k Ω	"	"
R935	QRD141J-104SY	100 k Ω	"	"
R936	QRD141J-680SY	68 Ω	"	"
R937	QRD141J-101SY	100 Ω	"	"
R938	QRD141J-394SY	390 k Ω	"	"
R939	QRD141J-223SY	22 k Ω	"	"
R940	QRD141J-104SY	100 k Ω	"	"
R941	QRD141J-102SY	1 k Ω	"	"
R942	QRD141J-101SY	100 Ω	"	"
R943	QRD141J-153SY	15 k Ω	"	"
R944	QRD129J-471	470 Ω	1/2 W	"
R945	QRD141J-155SY	1.5 M Ω	1/4 W	"
R946	QRD141J-333SY	33 k Ω	"	"
R947	QRD141J-104SY	100 k Ω	"	"
R948	QRD141J-473SY	47 k Ω	"	"
R949	QRD141J-122SY	1.2 k Ω	"	"
R950	QRD141J-473SY	47 k Ω	"	"
R951	QRD141J-102SY	1 k Ω	"	"

Resistors

Item No.	Part Number	Rating	Description
VR803	QVP4A0B-104	100 k (B)	Carbon
VR804	QVZ3501-103	10 k (B)	Cermet
VR805	QVZ3501-104	100 k (B)	"
VR806	QVP4A0B-102	1 k (B)	Carbon
VR807	QVZ3501-473	47 k (B)	Cermet

Others

Item No.	Part Number	Rating	Description
	LPSP3008ZS		A'ssy Screw
	LPSP3012ZS		"
	QMV5005-002		2P Plug A'ssy
	QMV5005-003		3P Plug A'ssy
	QMV5005-004		4P Plug A'ssy
	QMV5005-006		6P Plug A'ssy
	QMV5005-010		10P Plug A'ssy
	WSS3000N		Washer
SW1	ESP0001-001		Switch (START/STOP)
SW2	ESP0001-001		Switch (UP/DOWN)
SW3	ESP0001-001		" (RIGHT)
SW4	ESP0001-001		" (LEFT)
SW5	QSP0410-001		Push Switch (SPEED)
SW6	QSP0410-001		Push Switch (SIZE)
SW7	QSP0410-001		" (REPEAT)
SW8	QSP0410-001		" (READY)

Others

Item No.	Part Number	Rating	Description
	See page 22		Fuse Clip
	EWR34A-20NN		Flat Wire
	EWR35A-15NN		"
	ERW35A-25NN		"
	E03732-015A		Plug
	E300687-002		Heat Sink
	E41541-21		Bushing
	G746		Silicon Grease

10. Packing Materials and Part Numbers

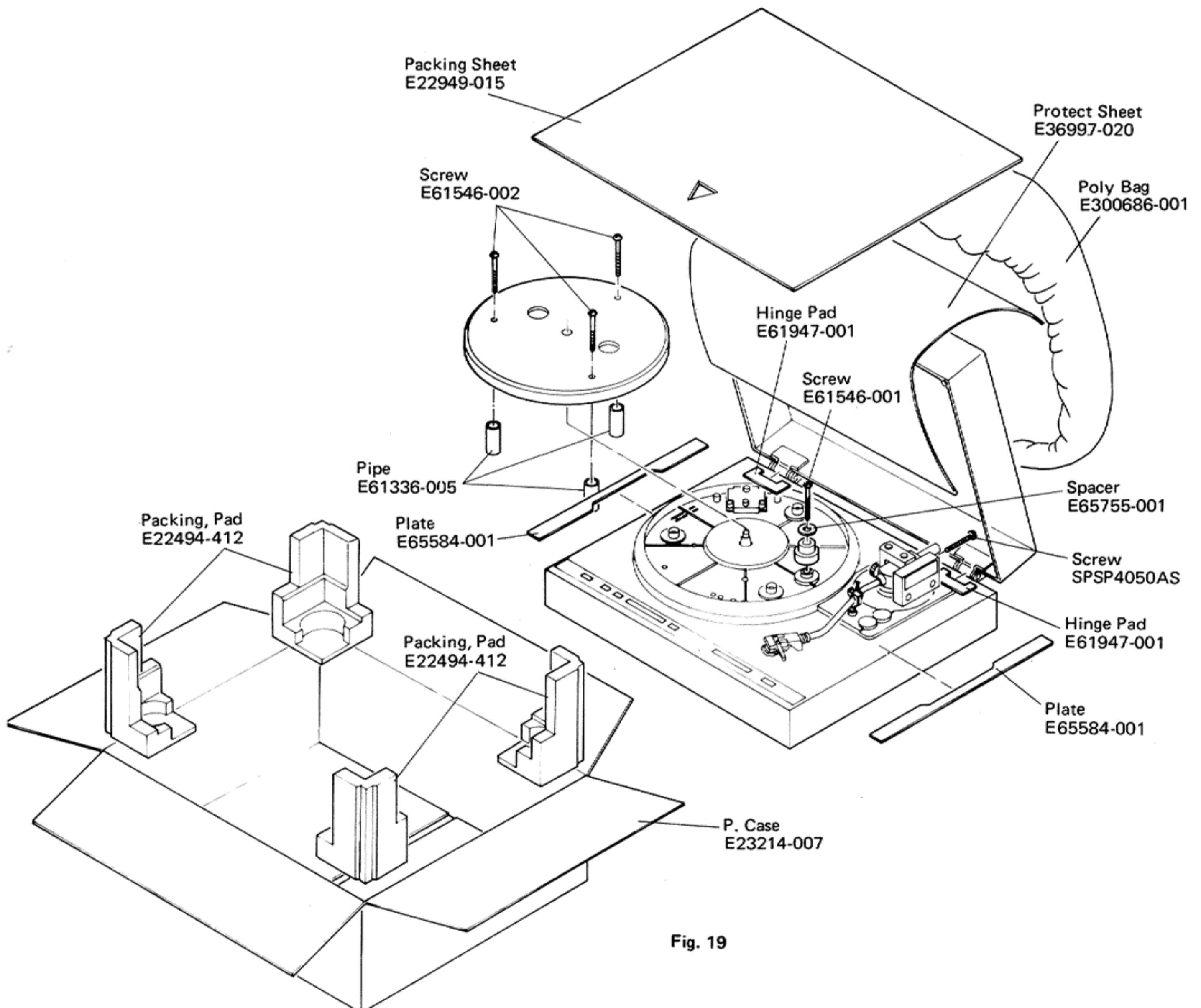


Fig. 19

12. Accessories List

No.	Part Number	Description	Q'ty
1	E30580-851A	Instruction Book	1
2	See below	Warranty Card	1
3	BT20042	"Does it better" (for U.S.A. & U.S. Military Market only)	1
4	E41202-2	Envelope	1
5	E66329-001	EP Adapter	1
6	E04056	Siemens Plug (for other areas only)	1

13. Parts List with Specified Numbers for Designated Areas

Page	Item No.	Description	U.S.A.	Canada	Europe	U.K.	Australia	U.S. Military Market and Other Countries
16	4	Tonearm Ass'y	ARM-535	ARM-535	MP-312S	ARM-535	MP-312S	MP-312S
16	13	P.C. Board Ass'y	TXX-270A	TXX-270A	TXX-270C	TXX-270C	TXX-270C	TXX-270B
16	15	Power Transformer \triangle	E03032-40B	E03032-40B	E03032-40E	E03032-40EBS	E03032-40E	E03032-40C
16	27	Power Cord \triangle	QMP1200-20	QMP1200-20	QMP3900-200	QMP9017-008BS	QMP2560-244	QMP7600-250
16	28	Cord Clamp	QHS3876-162	QHS3876-162	A37897	A37897	A37897	A37897
16	29	C.S. Bracket	E65431-002	E65431-002	—	—	—	—
16	31	Voltage Selector \triangle	—	—	—	—	—	QSR0085-001U
16	32	Fuse \triangle	QMF61U1-1R0	QMF61U1-1R0	QMF51A2-R80L	QMF51A2-R80LBS	QMF51A2-R80L	QMF61U1-1R0
16	35	Barrier Plate	E67308-001	E67308-001	—	—	—	—
16	37	Foot Ass'y	E300666-002	E300666-002	E300666-001	E300666-001	E300666-001	E300666-001
16	30	Lug Strip Ass'y \triangle	—	—	QML1810-054	QML1810-054BS	QML1810-054	QML1810-054
16	38	Mask Cap	E65395-002	E65395-002	—	—	—	—
21	—	Fuse Clip	E45524-002	E45524-002	E48965-002	E48965-002	E48965-002	E45524-002
24	—	Warranty Card	BT20032B	BT20025C	—	BT20013C	BT20029B	BT20032B (U.S. Military Market only)
16	34	Bottom Cover Ass'y	E10547-002	E10547-002	E10547-001	E10547-001	E10547-001	E10547-001
16	43	Connector \triangle	E03830-001	E03830-001	—	—	—	—

\triangle : Safety parts

Power Specifications

Countries	Line Voltage & Frequency	Power Consumption
U.S.A. & CANADA	AC 120 V~, 60 Hz	16 Watts
CONTINENTAL EUROPE	AC 220 V~, 50 Hz	"
U.K. & AUSTRALIA	AC 240 V~, 50 Hz	"
U.S. MILITARY MARKET	AC 110/120/220/240 V~ Selectable, 50/60 Hz	"
OTHER AREAS	AC 110/120/220/240 V~ Selectable, 50/60 Hz	"

JVC

VICTOR COMPANY OF JAPAN, LIMITED, TOKYO, JAPAN