

**SERVICE MANUAL**

**PARTS LIST** 

PRIDE IN QUALITY

**AKAI DIRECT DRIVE TURNTABLE**

MODEL **AP-007**



# AKAI DIRECT DRIVE TURNTABLE

## MODEL **AP-007**

|           |                      |   |
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# I. TECHNICAL DATA

## TURNTABLE SECTION

|                        |                                                                                                     |
|------------------------|-----------------------------------------------------------------------------------------------------|
| TYPE                   | Direct Drive fully automatic turntable                                                              |
| PLATTER                | 325 mm diameter aluminum alloy die-cast (Weight: 1.15 kg)                                           |
| SPEED                  | 33-1/3 and 45 rpm                                                                                   |
| MOTOR                  | 6 pole outer rotor AC servo controlled motor for turntable drive<br>Geared motor for tone arm drive |
| WOW AND FLUTTER        | 0.03% WRMS (JIS C5521) $\pm 0.045\%$ Weighted zero to peak (DIN 45507)                              |
| SIGNAL TO NOISE RATIO  | 50 dB (DIN 45539A), 73 dB (DIN 45539B)                                                              |
| SPEED ADJUSTMENT RANGE | $\pm 4\%$ at 33-1/3 rpm, $\pm 5\%$ at 45 rpm                                                        |

## TONE ARM SECTION

|                                  |                                                                                                                     |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------|
| TYPE                             | S-shaped static balanced type stainless steel tubular arm with inside force<br>conceller and lateral balance weight |
| ARM LENGTH                       | 220 mm                                                                                                              |
| STYLUS PRESSURE ADJUSTMENT RANGE | 0 to 3 grams                                                                                                        |
| APPLICABLE CARTRIDGE WEIGHT      | 4.5 to 10.5 grams (8.5 to 14.5 grams using sub weight)                                                              |
| OFF-SET ANGLE                    | 22°                                                                                                                 |
| TRACKING ERROR ANGLE             | Within $\pm 2^\circ$                                                                                                |
| OVERHANG                         | 15 mm                                                                                                               |
| SHELL WEIGHT                     | 9.5 grams                                                                                                           |
| ARM LIFTER                       | Oil Damped type                                                                                                     |

## MISCELLANEOUS

|                    |                                                                                                                   |
|--------------------|-------------------------------------------------------------------------------------------------------------------|
| POWER REQUIREMENTS | CSA Models: 120V/60 Hz<br>CEE and SEV Models: 220 V/50 Hz<br>Other Models: 110 to 120 V/220 to 240 V, 50 to 60 Hz |
| DIMENSIONS         | 460(W) x 135(H) x 380(D) mm<br>(18.1 x 5.3 x 14.9")                                                               |
| WEIGHT             | 9.5 kg (20.9 lbs)                                                                                                 |

\* For improvement purposes, specifications and design are subject to change without notice.

### 3. PHOTO OF CABINET BLOCK



### 3) CABINET BLOCK

| Ref. No. | Parts No. | Description                          | Schematic No. | Qty |
|----------|-----------|--------------------------------------|---------------|-----|
| 3-1      | BC740002  | Cabinet Block Comp. AP-007           | 2084781500    | 1   |
| 3-2      | TP740005  | Hinge (A) AP-007                     | 2086169600    | 2   |
| 3-3x     | ZS740006  | Tapping Screw #2, 3x8 (Bind) (BLACK) |               | 6   |
| 3-4      | TP740007  | Lamp Case AP-007                     | 2272162200    | 1   |
| 3-5      | SP740009  | Bottom Cover AP-007                  | 2084781600    | 1   |
| 3-6x     | ZS740010  | Tapping Screw #2, 4x12 (Pan)         |               | 12  |
| 3-7      | BC740011  | Dust Cover AP-007                    | 2084781700    | 1   |
| 3-8      | TP719897  | Hinge (B)                            | 2086168800    | 2   |
| 3-9      | ZS538470  | Screw, oval countersunk head 4x10    |               | 4   |
| 3-10x    | TP740012  | Cover (CSA, CEE) AP-007              | 2285469400    | 1   |

In case of trouble, etc. necessitating disassembly, please disassemble in the order shown in photographs. Reassemble in reverse order.

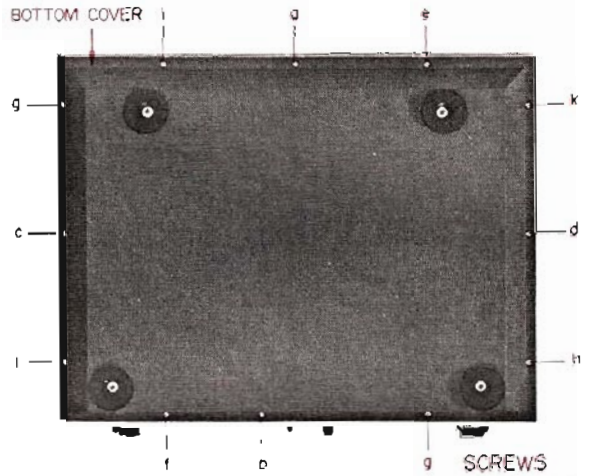
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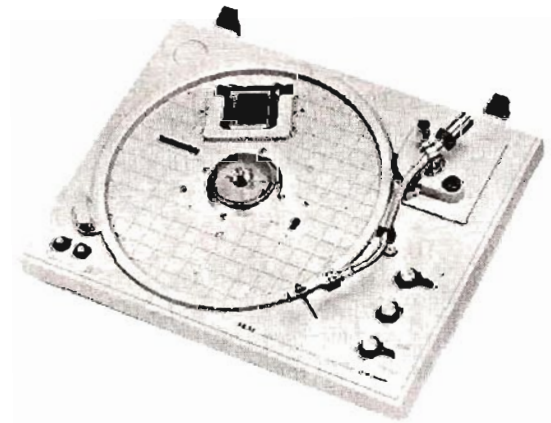
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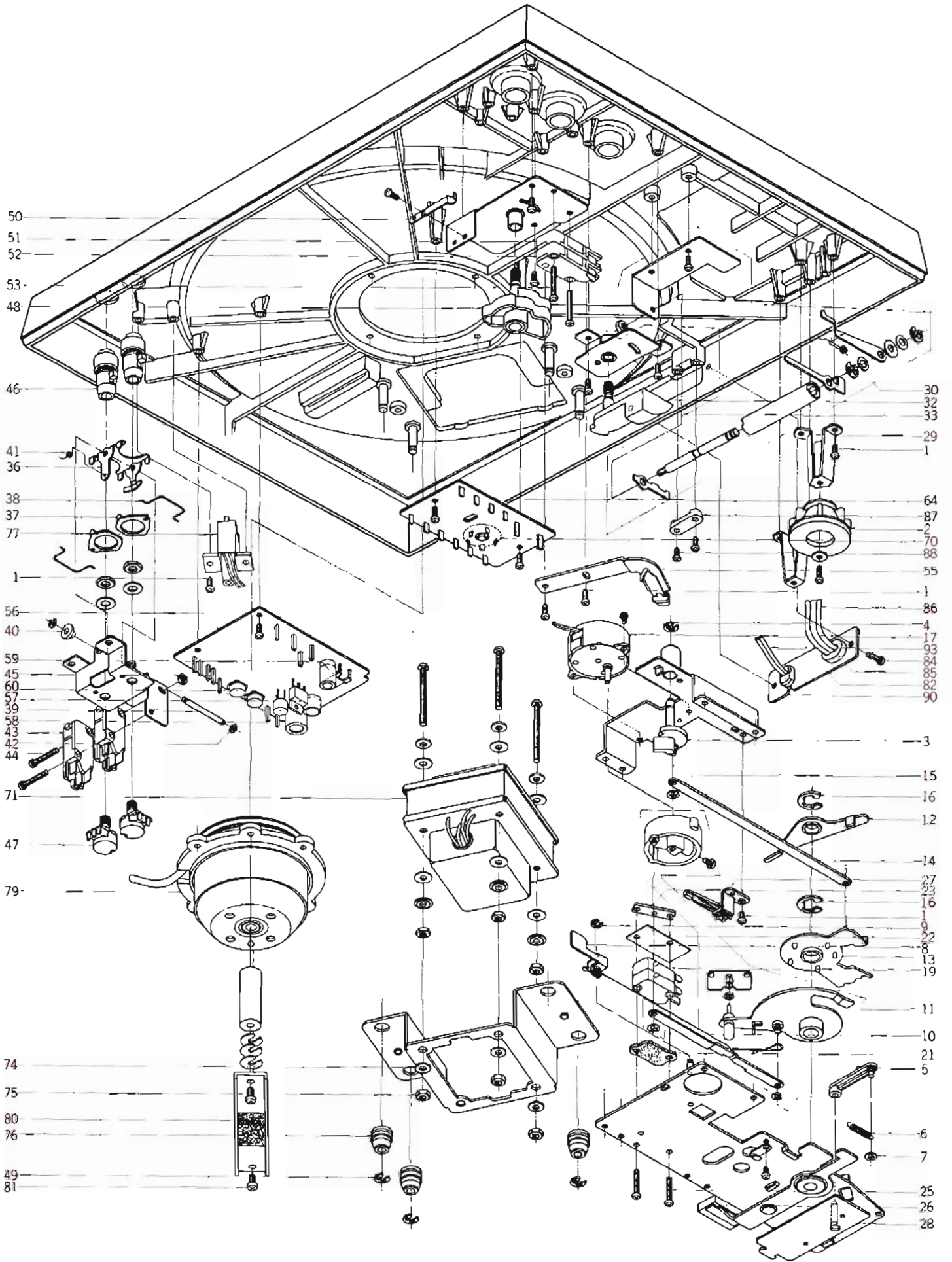


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### III. CONTROLS AND PRINCIPAL PARTS LOCATIONS

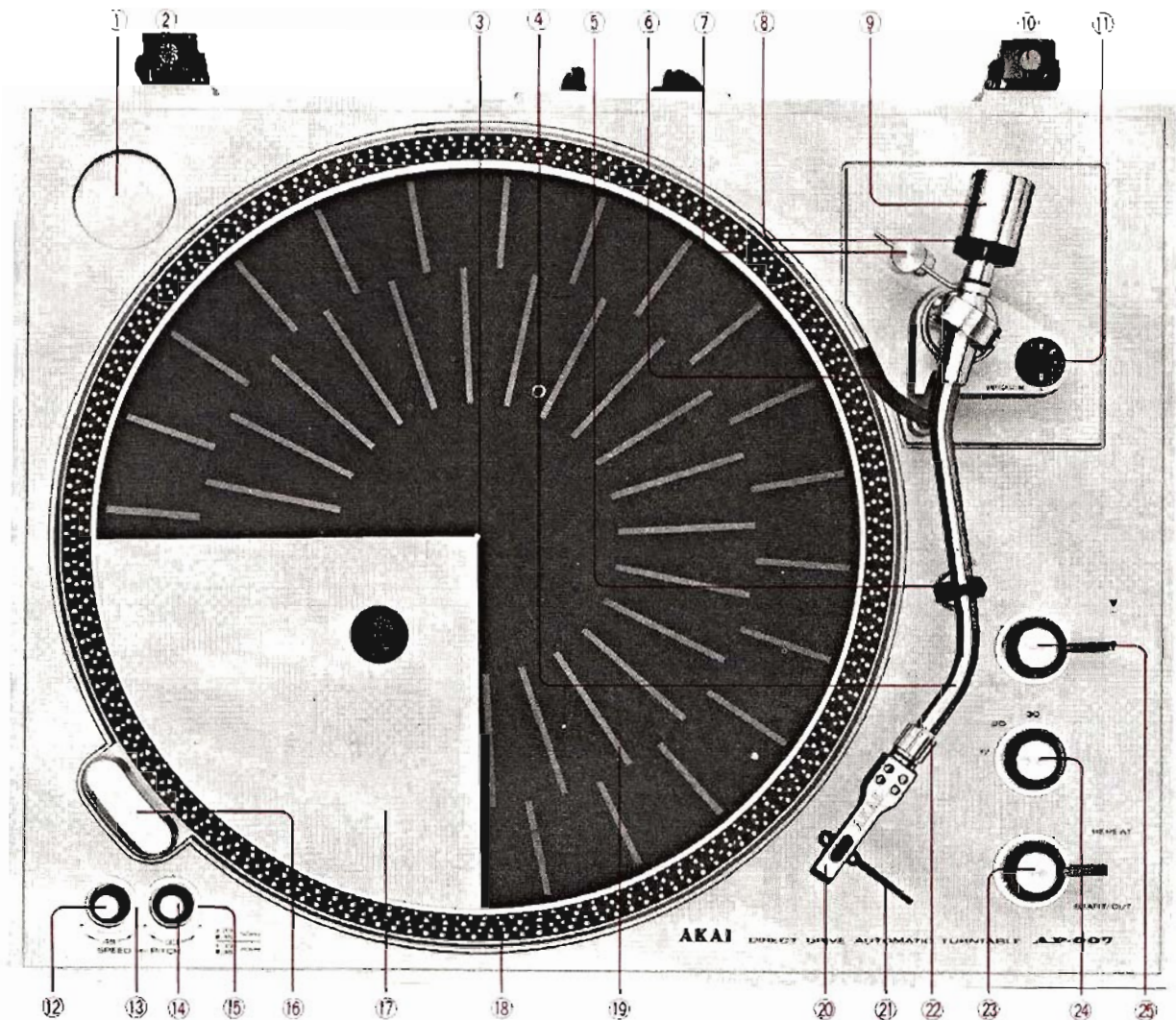
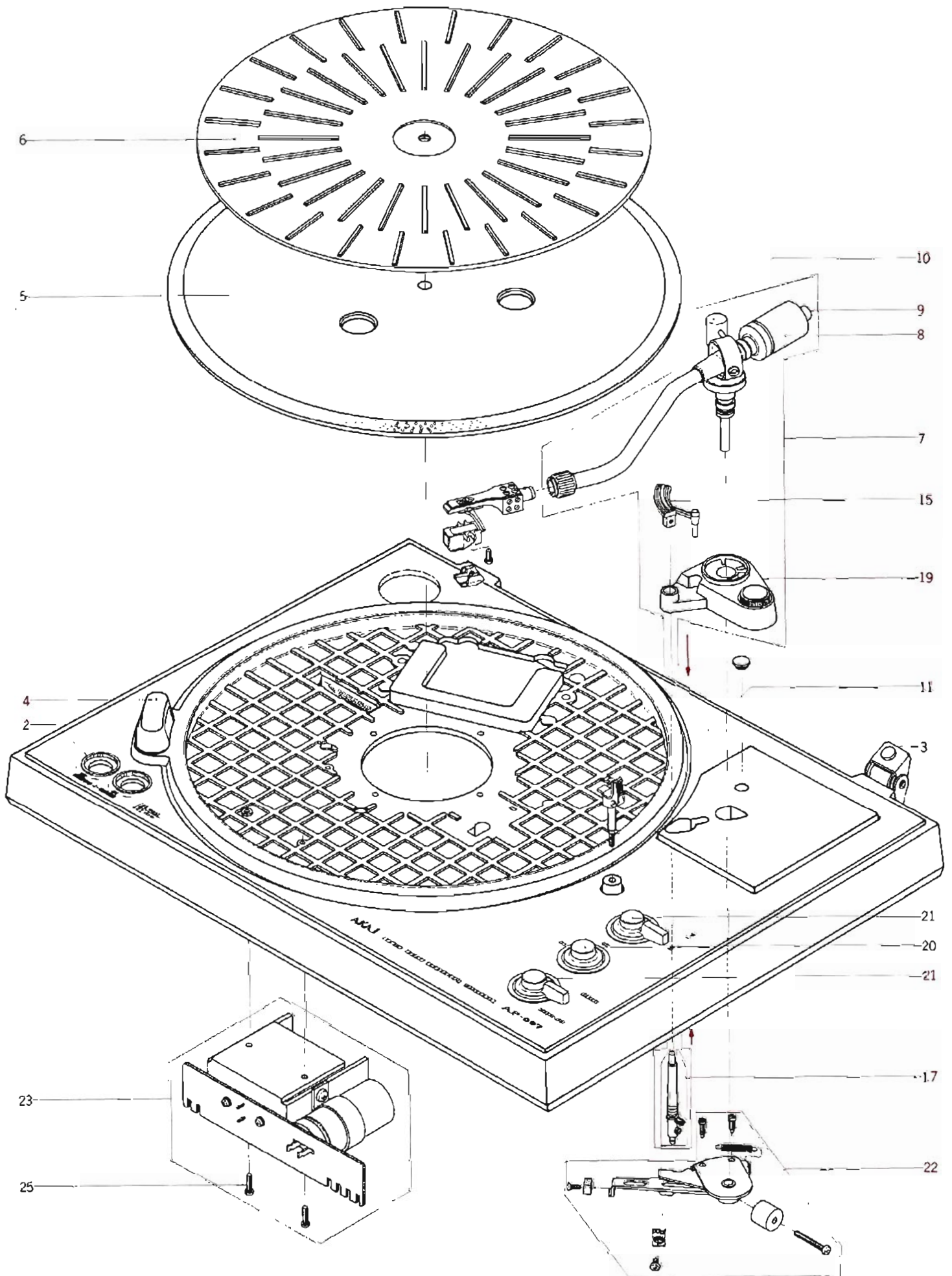


Fig. 1 Top View

- |                               |                                  |
|-------------------------------|----------------------------------|
| 1. 45 rpm ADAPTER HOLDER      | 15. PITCH CONTROL (33-1/3 rpm)   |
| 2. HINGE                      | 16. BUILT-IN STROBE LIGHT        |
| 3. SPINDLE                    | 17. TURNTABLE PLATTER            |
| 4. TONE ARM                   | 18. STROBE MARKINGS              |
| 5. TONE ARM REST              | 19. RUBBER MAT                   |
| 6. TONE ARM LIFTER            | 20. CARTRIDGE SHELL              |
| 7. LATERAL WEIGHT             | 21. CARTRIDGE SHELL FINGER LEVER |
| 8. STYLUS PRESSURE SCALE RING | 22. LOCKING NUT                  |
| 9. MAIN WEIGHT                | 23. CONTROL LEVER                |
| 10. HINGE                     | 24. DISC SIZE SELECTOR           |
| 11. ANTI-SKATING ADJUSTER     | 25. TONE ARM LIFTER LEVER        |
| 12. 45 rpm SPEED SELECTOR     | ▼ TO LOWER                       |
| 13. PITCH CONTROL (45 rpm)    | ▼ TO LIFT                        |
| 14. 33-1/3 rpm SPEED SELECTOR |                                  |

# 1. ILLUSTRATION OF ASSEMBLY BLOCK (1)





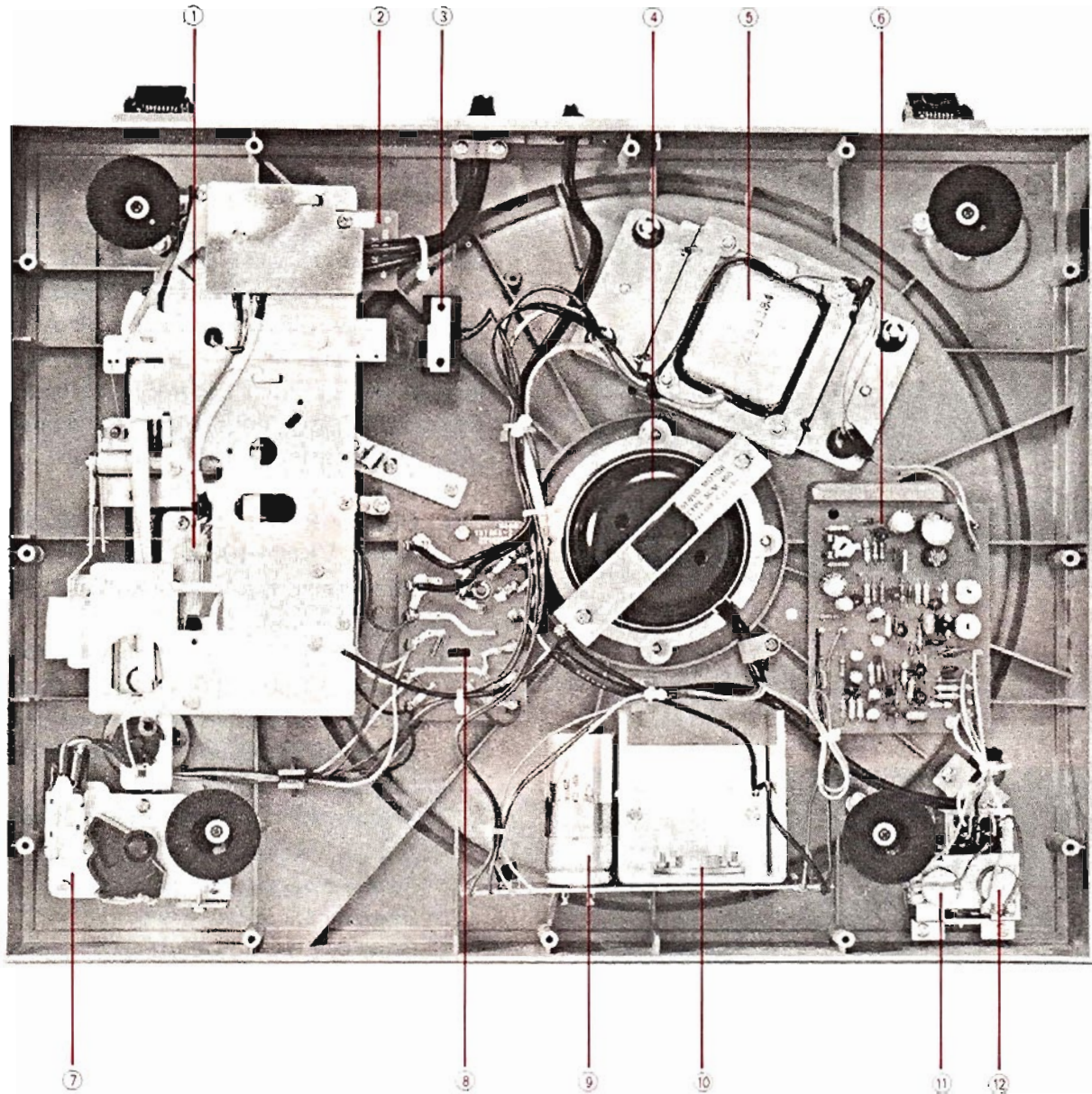


Fig. 2 Bottom View

1. MUTE SWITCH
2. PHONO P.C BOARD
3. REED SWITCH
4. AC SERVO MOTOR
5. POWER TRANSFORMER
6. CONTROL P.C BOARD
7. START/CUT, REPEAT SWITCH
8. SUPPLY P.C BOARD
9. PHASE CAPACITOR C614 4 $\mu$ /250V
10. POWER TRANSISTOR TR610 2SD198
11. 33-1/3 rpm SPEED/PITCH CONTROL
12. 45 rpm SPEED/PITCH CONTROL

## IV. ADJUSTMENTS

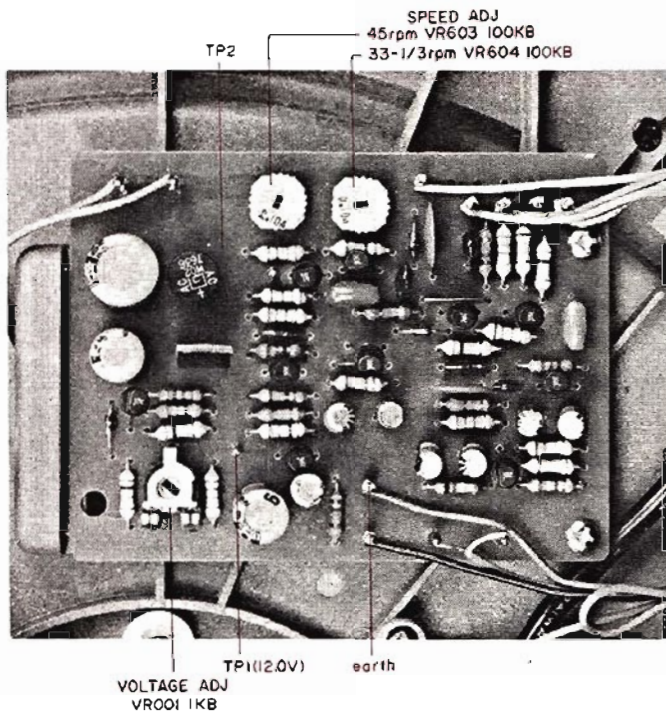


Fig. 3 Control P.C Board

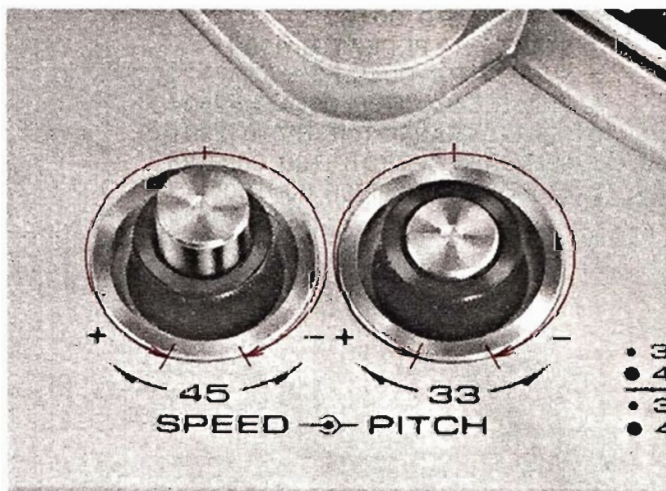
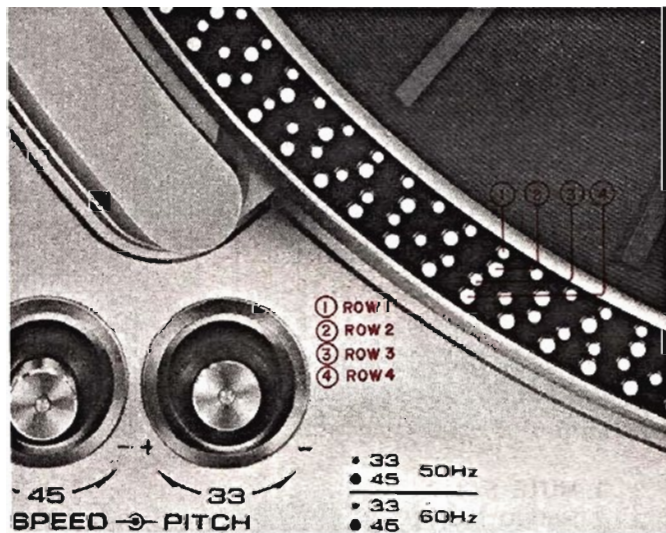


Fig. 4 Speed Adjustment

### 1. POWER SOURCE VOLTAGE

#### ADJUSTMENT (Refer to Fig. 3)

Connect a DC Voltmeter to test point TP1 and adjust semi-fixed resistor VR001 1 kB so that the voltage is 12.0 V.

### 2. SPEED ADJUSTMENT

#### (Refer to Figs. 3 and 4)

The pitch control of each speed is adjusted with the outer knob of the Speed Selectors. The movable range of these Pitch Control Knobs is indicated by the arrow marks in Fig. 4(b). Therefore, it is necessary to set the Pitch Control Knob to the center of this movable range prior to speed adjustment.

#### 2-1 50Hz OPERATING FREQUENCY

- 1) Depress 33 Speed Selector.
- 2) Observe Row 1 revolutions of Strobe markings. Adjust VR604 100 kB (Fig. 3) until Row 1 Strobe markings appear to come to a stand-still.
- 3) Depress 45 Speed Selector.
- 4) Observe Row 2 revolutions of Strobe markings. Adjust VR603 100 kB (Fig. 3) until Row 2 Strobe markings appear to come to a stand-still.

#### 2-2 60 Hz OPERATING FREQUENCY

- 1) Depress 33 Speed Selector.
- 2) Observe Row 3 revolutions of Strobe markings. Adjust VR604 100 kB (Fig. 3) until Row 3 Strobe markings appear to come to a stand-still.
- 3) Depress 45 Speed Selector.
- 4) Observe Row 4 revolutions of Strobe markings. Adjust VR603 100 kB (Fig. 3) until Row 4 Strobe markings appear to come to a stand-still.

#### 2-3 WHEN USING A FREQUENCY COUNTER

- 1) Depress 33 Speed Selector.
- 2) Connect frequency counter to TP-2 and earth (Fig. 3). Adjust semi-fixed resistor VR604 100 kB for the frequency counter to read 83.333 Hz.
- 3) Depress 45 Speed Selector.
- 4) Connect frequency counter as in 2) and adjust semi-fixed resistor VR603 100 kB (Fig. 3) for the frequency counter to read 112.5 Hz.

\* Perfect speed adjustment is attained when respective Strobe markings appear not to move.

\* Once pre-set adjustment have been made, further readjustment is not necessary unless a Pitch Control is in some way moved. In this case, re-adjust.

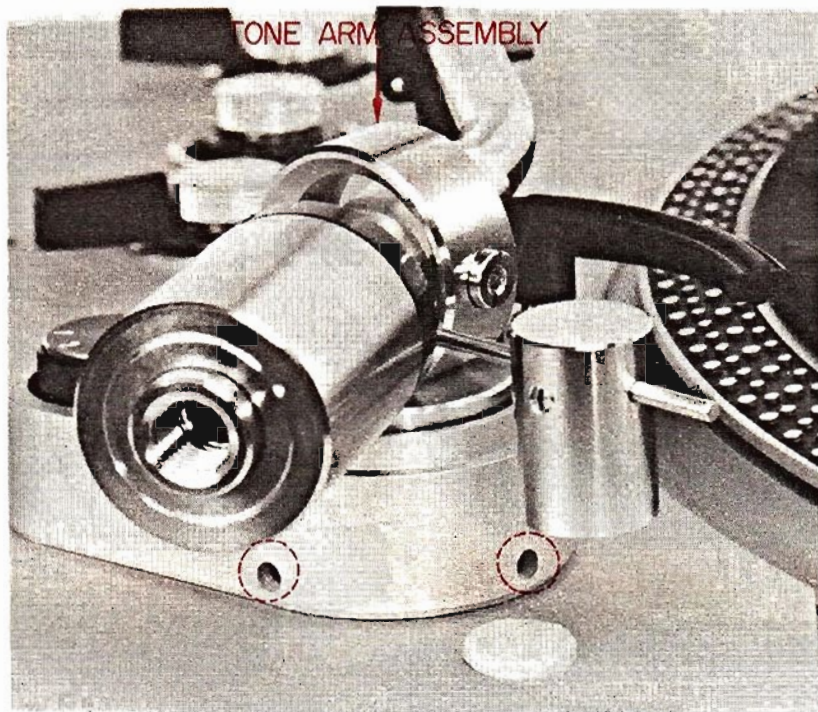


Fig. 5

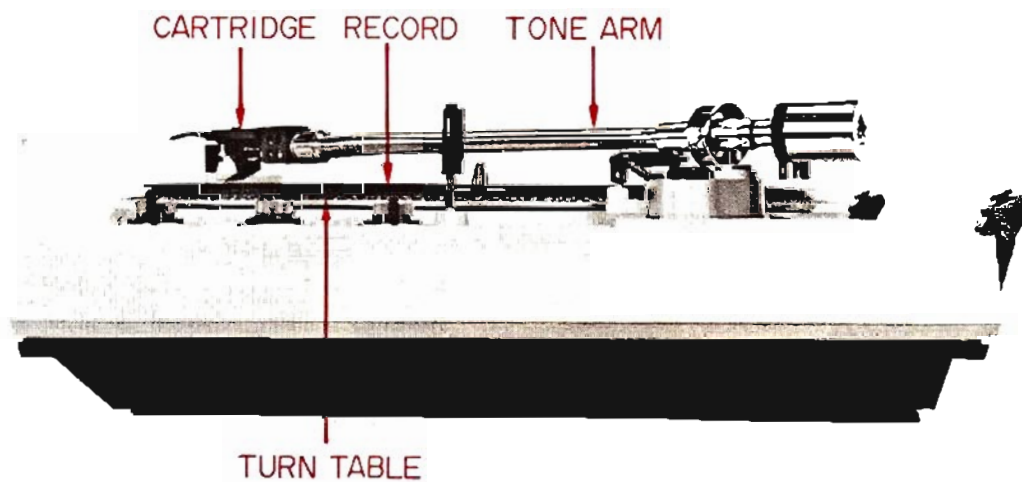


Fig. 6

### 3. TONE ARM HEIGHT ADJUSTMENT

(Refer to Figs. 5 and 6)

Tone Arm Height is factory adjusted to 17.3 mm to accommodate Model APC-5 cartridge. This can be adjusted by +5, -3 mm according to the height of the cartridge being used. If Tone Arm Height Adjustment is necessary, this can be accomplished as follows:

- 1) Use a minus driver as shown in Fig. 5 and loosen the two screws at the base of the tone arm assembly.
- 2) While playing a record, adjust tone arm height so that the tone arm is exactly horizontal as shown in Fig. 6 and tighten screw.

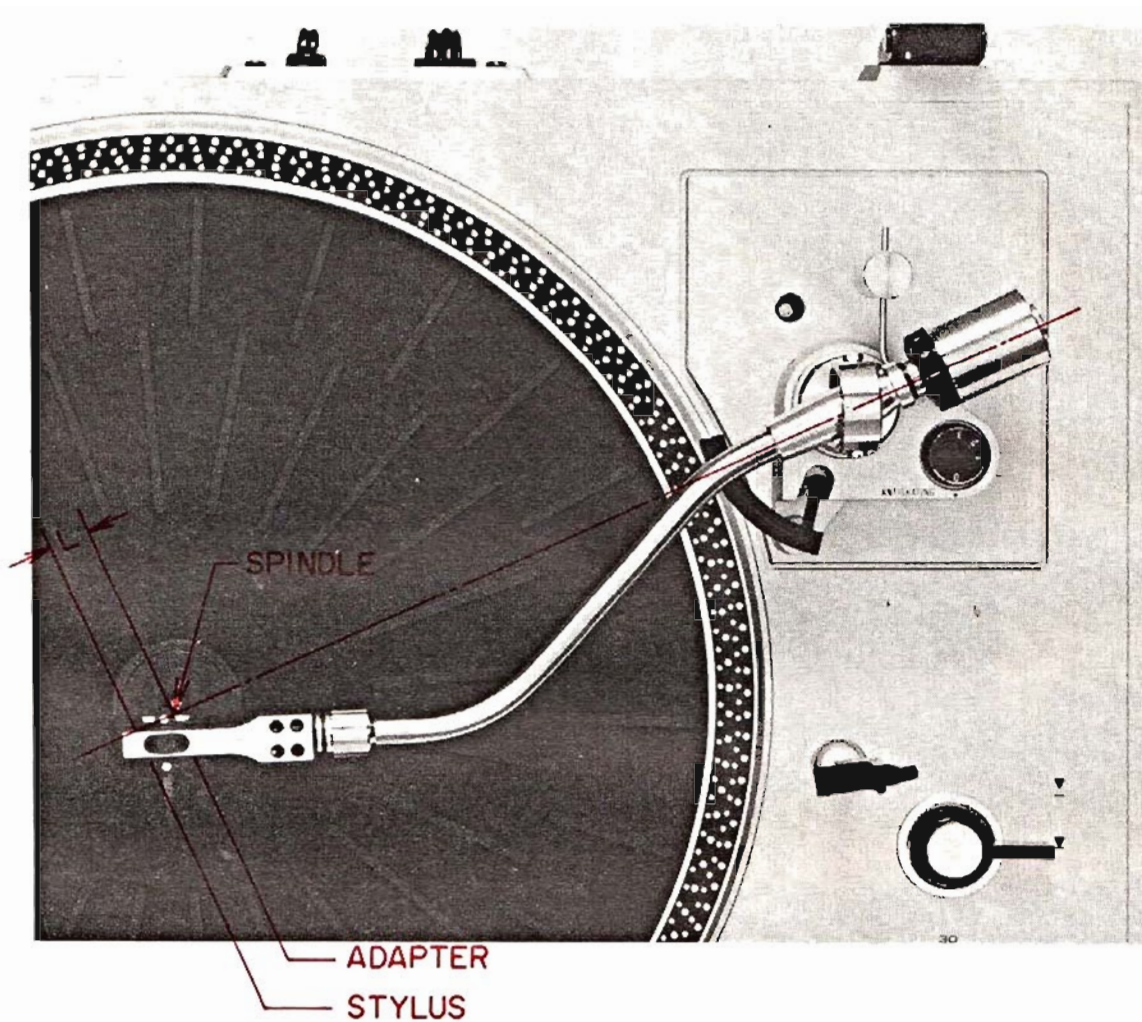


Fig. 7 Overhang Adjustment

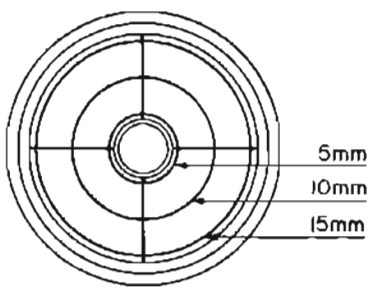


Fig. 8 45 rpm Adapter

#### 4. OVERHANG ADJUSTMENT

(Refer to Figs. 7 and 8)

A 45 rpm Adapter is supplied with your turntable for use when playing 45 rpm speed discs with a large center hole. Place the adapter on the turntable spindle. This adapter is also used for obtaining proper overhang when a cartridge is installed. The overhang is determined by the distance between the stylus and turntable spindle when the Tone Arm is moved to the center of the turntable. Correct overhang for the AP-007 is 15 mm. The stylus should be even with the 15 mm groove.

\* A 45 rpm adapter holder is provided on the upper left hand corner of the turntable for your convenience.

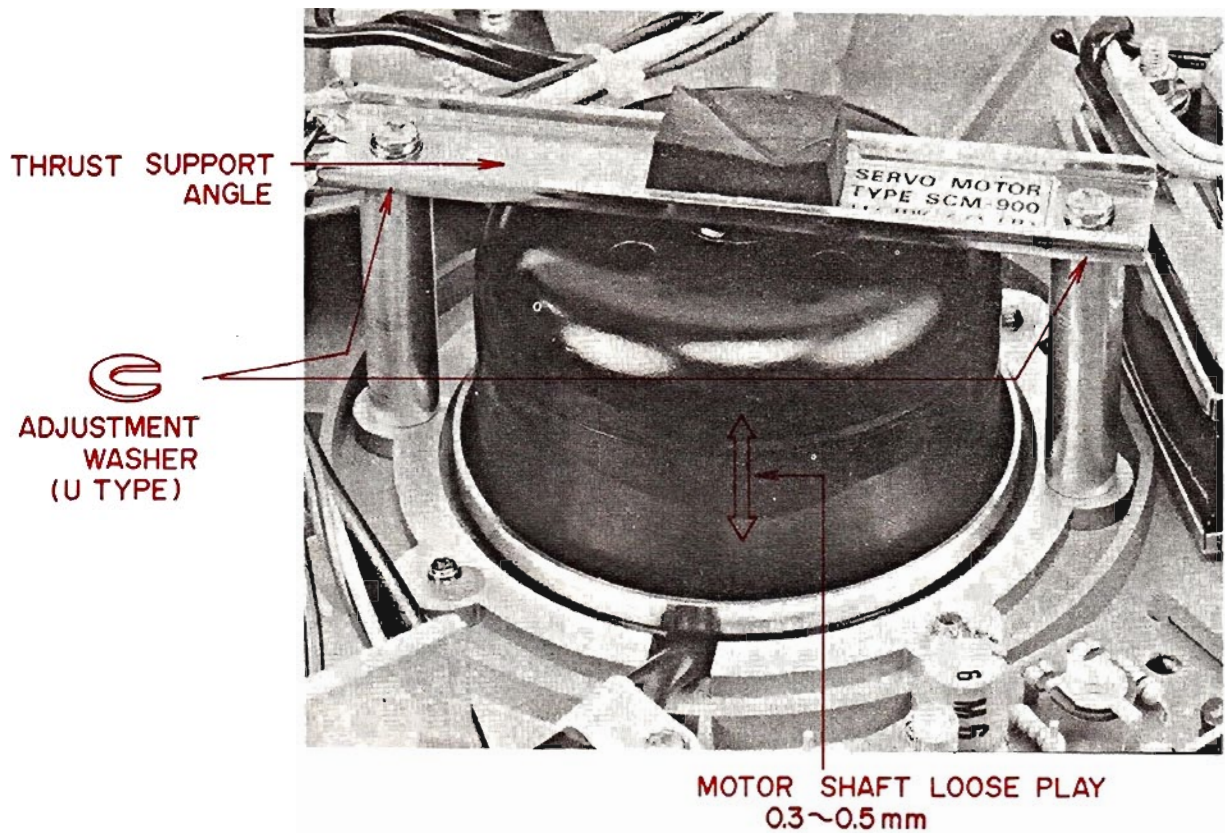


Fig. 9

#### 5. MOTOR SHAFT LOOSE PLAY

##### ADJUSTMENT (Refer to Fig. 9)

Adjust the U-type adjustment washer so that the outer rotor of the motor moves freely by 0.3 to 0.5 mm when shifter up and down with a hand.

#### 6. TONE ARM LIFTER HEIGHT

##### ADJUSTMENT

This adjustment is performed at the factory using the AKAI Model APC-5 cartridge. However, when another type of cartridge is employed, make sure that the clearance between the stylus tip and the disc record surface exceeds 4 mm when the tone arm is raised with the manual arm lifter. If this is not the case, loosen the arm lifter fixing screw indicated in Fig. 10 using a minus screwdriver, provide a clearance in excess of 4 mm, then retighten the fixing screw.

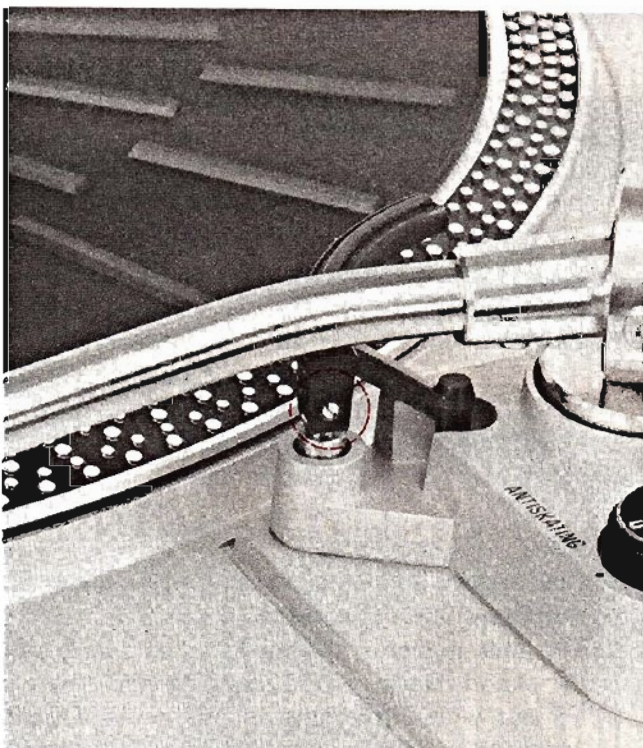


Fig. 10

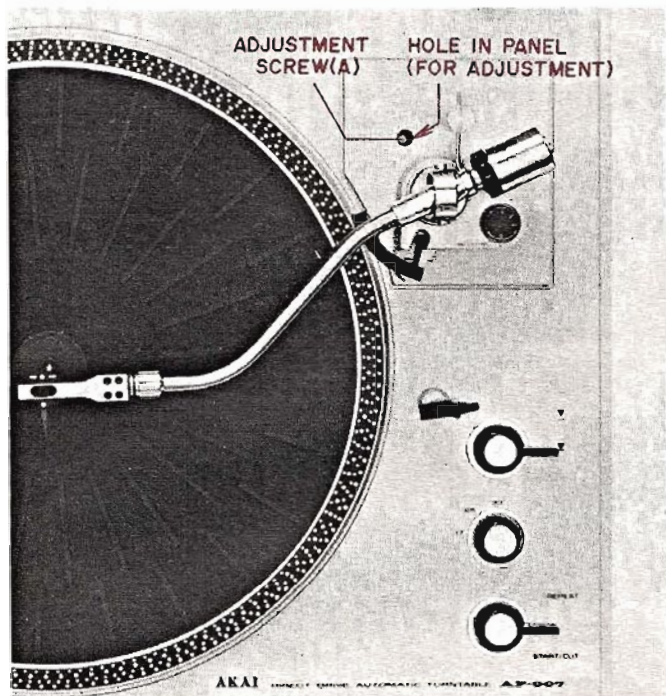


Fig. 11 Lead-in Adjustment

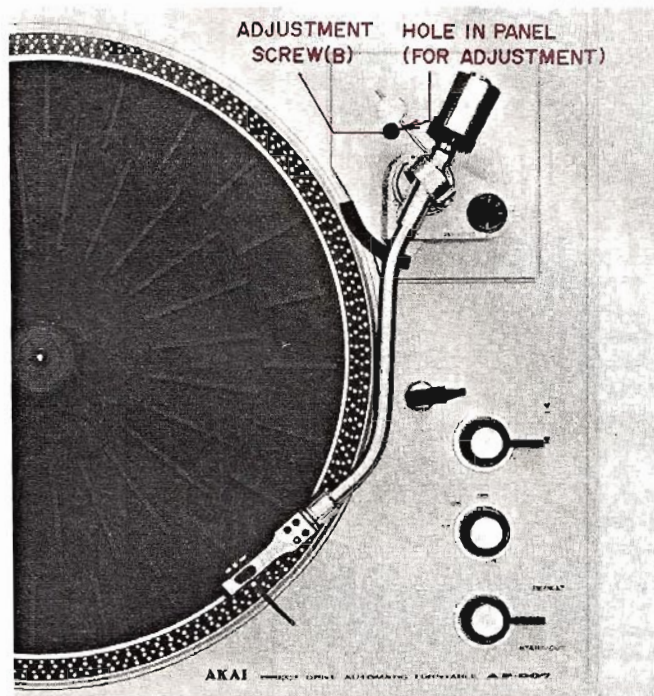


Fig. 12 Lead-out Position Adjustment

## 7. AUTO MECHANISM ADJUSTMENT

### 1) Lead-in adjustment

Remove the rubber cap from the tone arm stand. As illustrated in Fig. 11, when the tone arm is shifted from the tone arm rest nearly to the position where the lead-out motion starts, the adjustment screw (A) appears in the hole from which the rubber cap has been removed.

Turning the adjustment screw (A) clockwise and counterclockwise permits the lead-in position to move towards the center of the disc record and towards the outer rim of the record respectively. Therefore, lead-in position adjustment is performed by turning the adjustment screw (A) as follows:

Clockwise . . . . . To move the lead-in position towards the center of the record.

Counterclockwise . . . . . To move the lead-in position towards the outer rim of the record.

### NOTE

1. One rotation of the adjustment screw causes the tone arm stylus tip to shift by 2 mm.
2. The unit is factory adjusted so that, when using the AKAI Model APC-5 cartridge, and 30-cm/25-cm/17-cm JIS records, the stylus descends to the record surface within the range of 293 ~ 298 $\phi$ , 242 ~ 247 $\phi$  or 168 ~ 173 $\phi$  (with the turntable spindle as the diameter center point). Sono-sheets or records not in accordance with JIS dimension standards have entirely different lead-in positions. Therefore, when using such records, play them by manual operation instead of adjusting the lead-in position with the adjusting screw.
3. Be sure to fit the rubber cap after adjustment.

### 2) Lead-out adjustment

Remove the rubber cap from the tone arm stand. With the tone arm positioned slightly apart from the tone arm rest as shown in Fig. 12, the adjustment screw (B) appears in the hole from which the rubber cap has been removed. Turning the adjustment screw (B) clockwise and counterclockwise permits the lead-out position to shift towards the outer rim of the record and towards the center of the record respectively.

Therefore, lead-out position adjustment is performed by turning the adjustment screw (B) as follows:

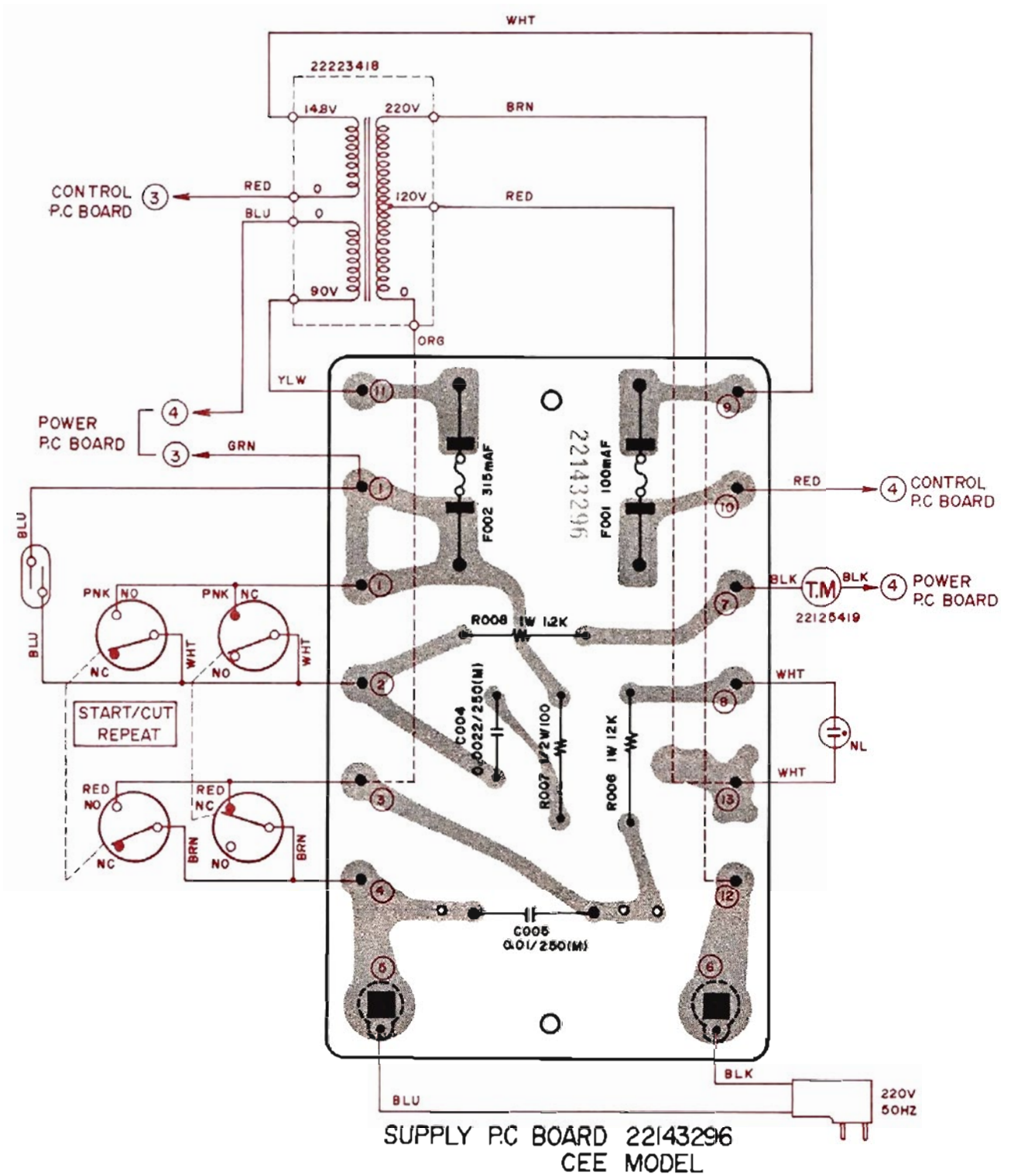
Clockwise . . . . . To shift the lead-out position towards the outer rim of the record.

Counterclockwise . . . . . To shift the lead-out position towards the center of the record.

### NOTE

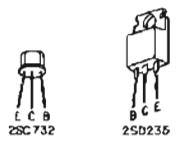
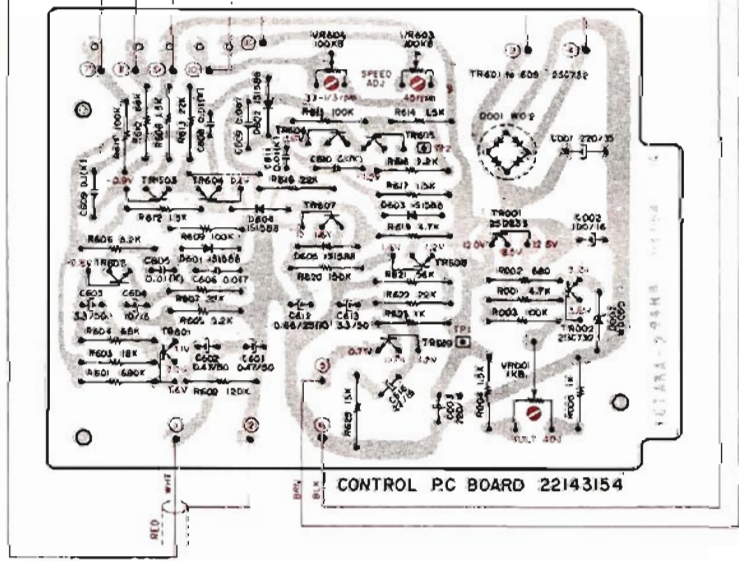
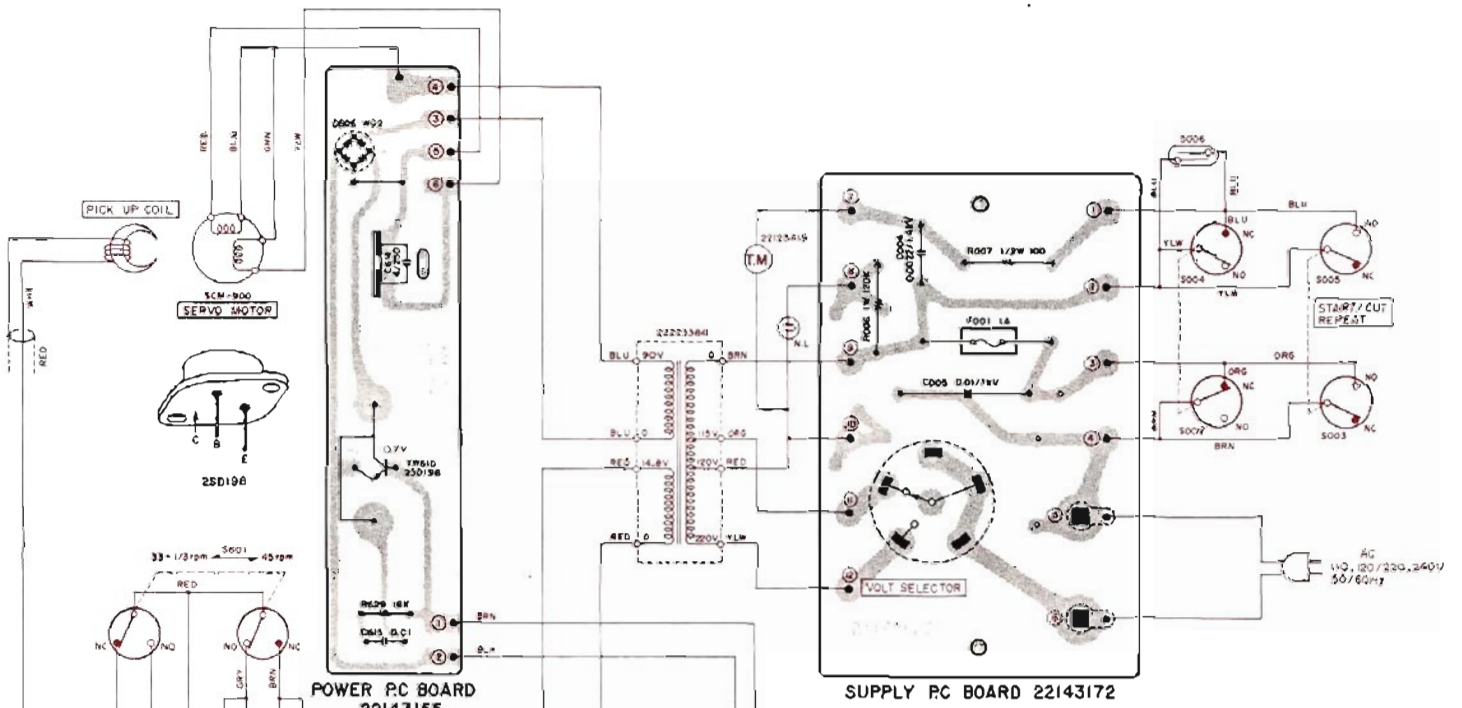
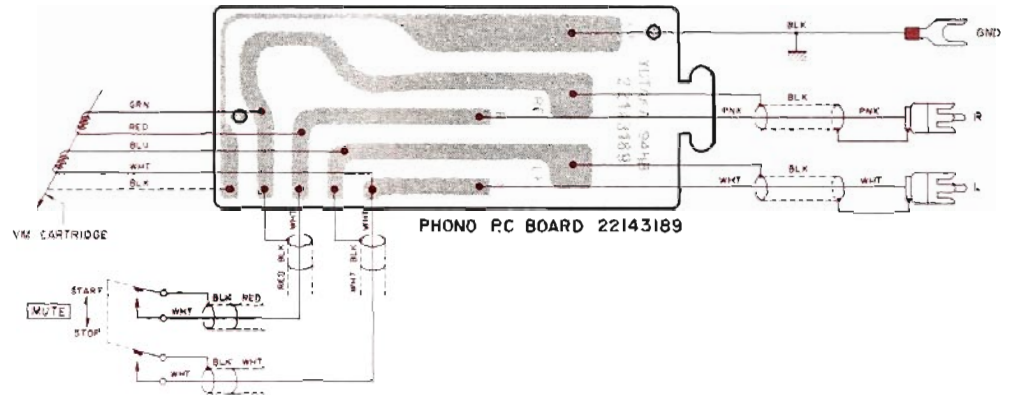
1. One rotation of the adjustment screw causes the tone arm stylus tip to shift by 2 mm.
2. The unit is factory adjusted so that when using the AKAI Model APC-5 cartridge the stylus is led out within the range of 109 ~ 115 $\phi$  (with 30-cm/25-cm JIS record) and 98 ~ 106 $\phi$  (with 17-cm JIS record) with the turntable spindle as the diameter center point.
3. Be sure to fit the rubber cap after the adjustment.

### 3) SUPPLY P.C BOARD CEE Model (22143296)



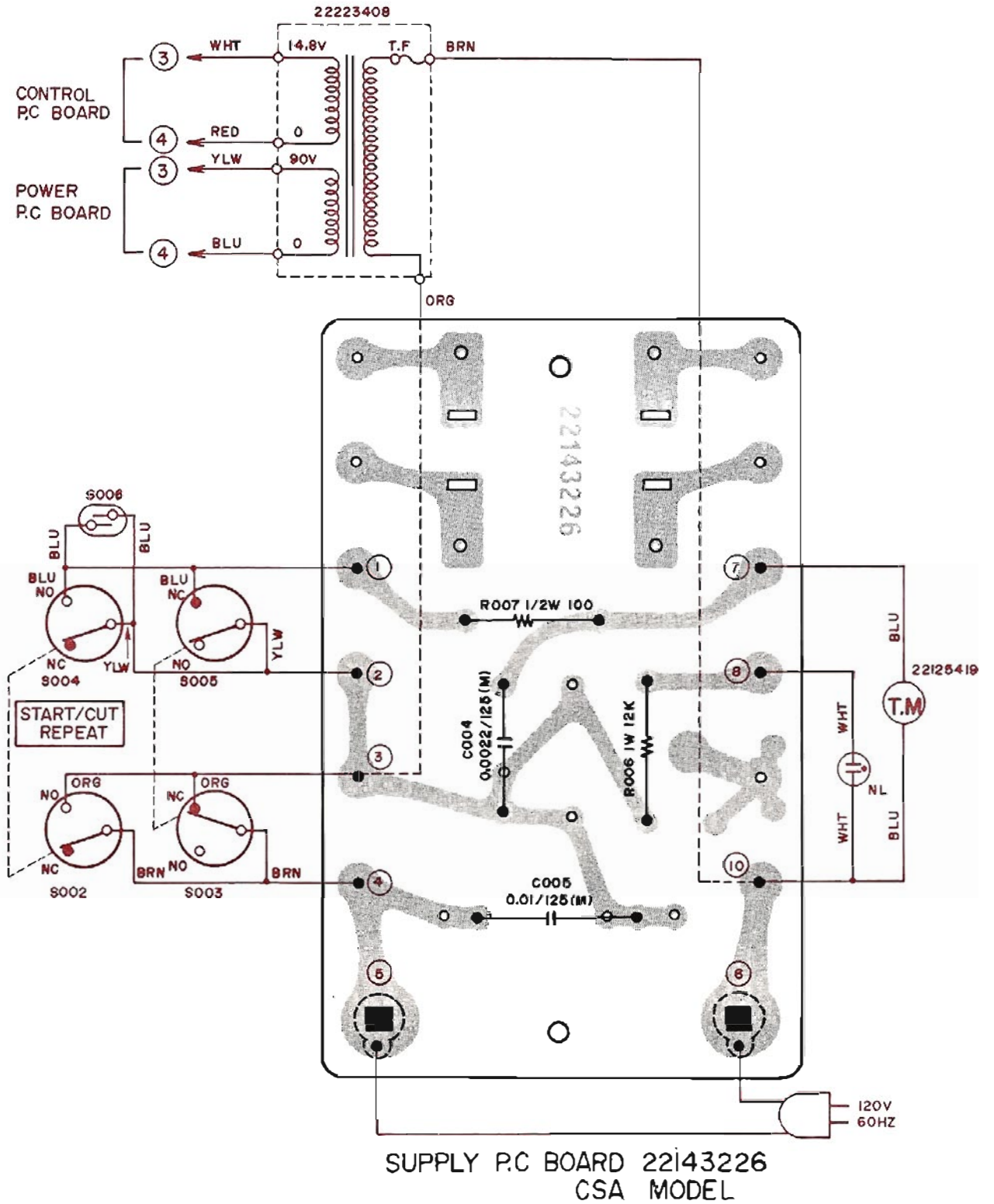
## 2. COMPOSITION OF VARIOUS P.C BOARDS

### 1) P.C BOARD EXPLODED VIEW

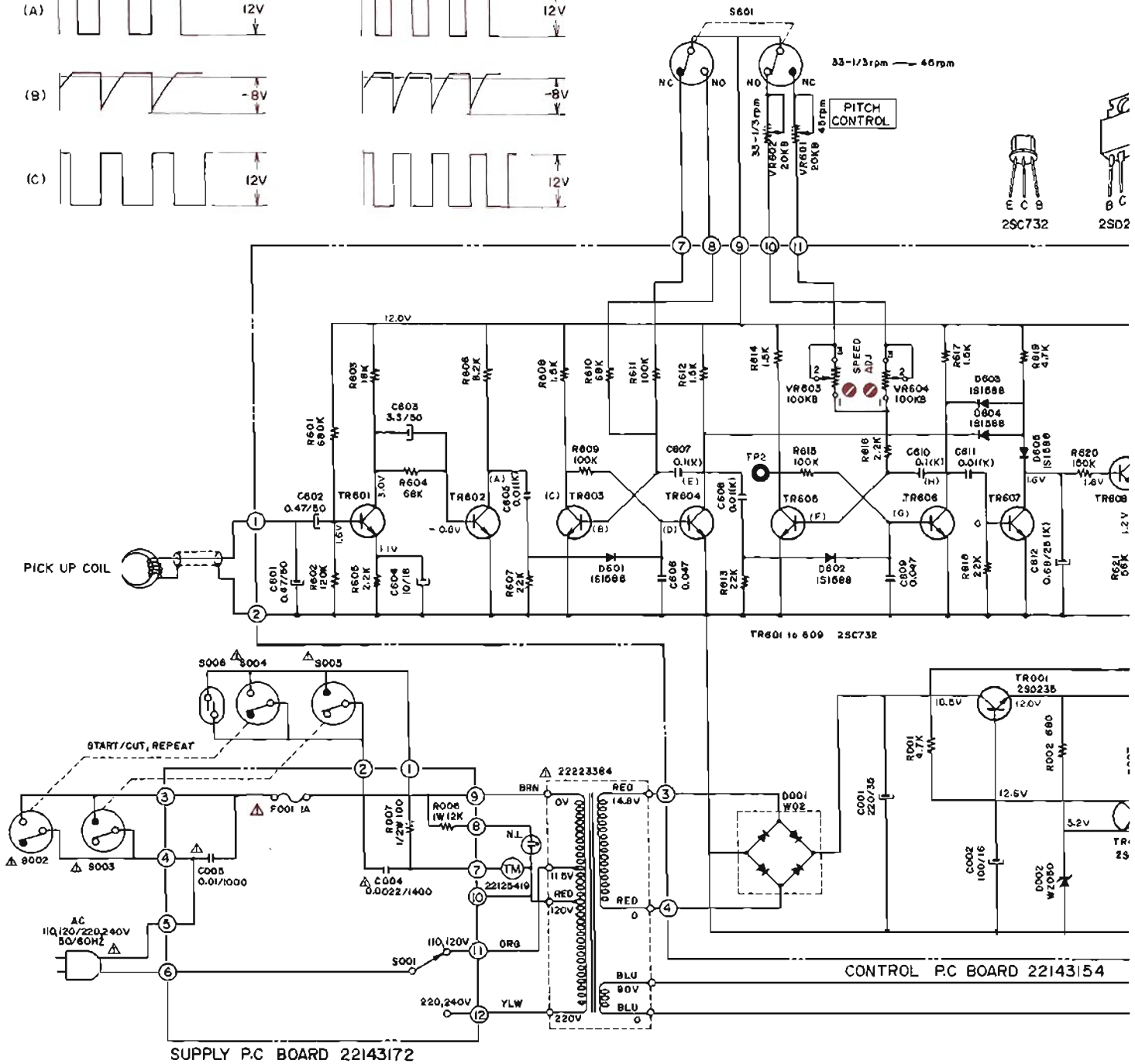
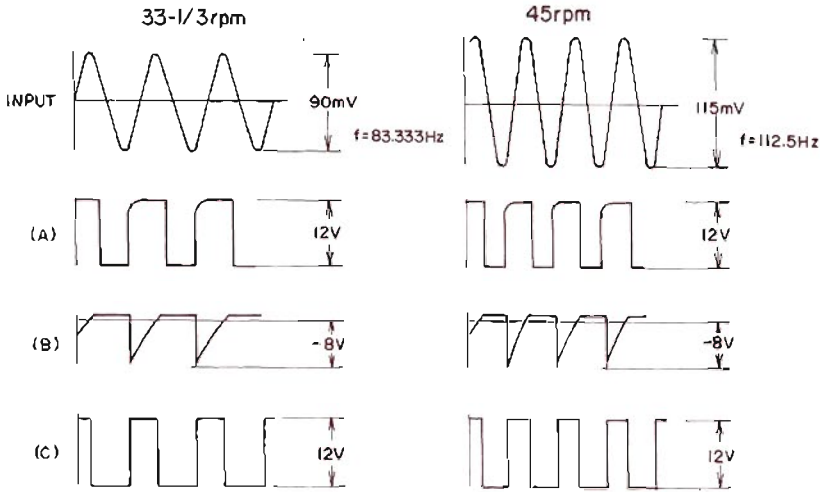




2) SUPPLY P.C BOARD CSA Model (22143226)

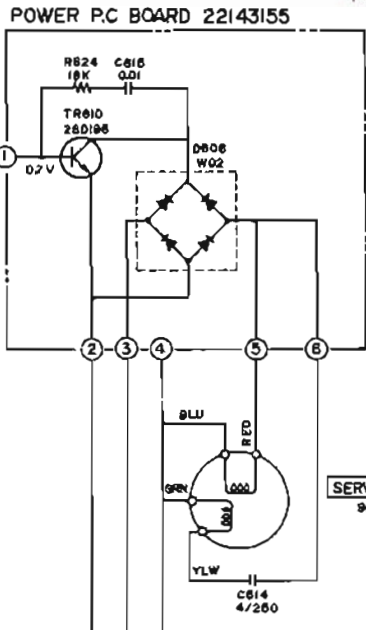
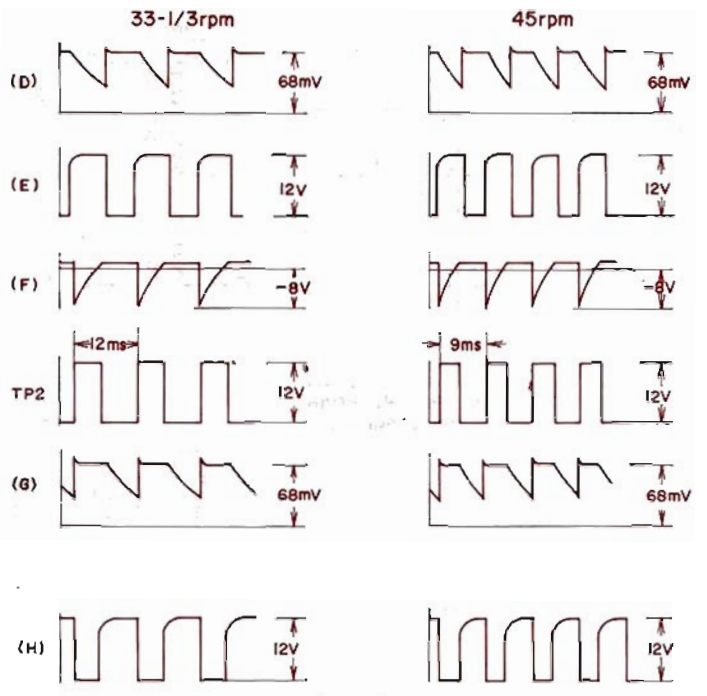
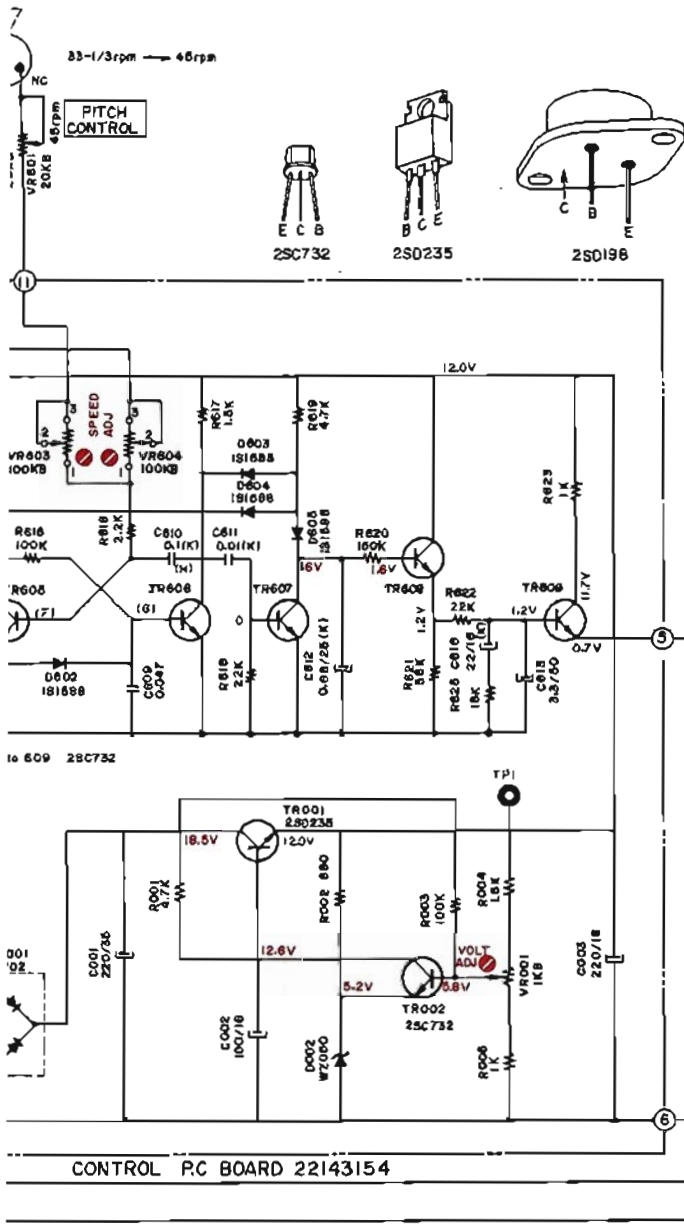


AP-007



WARNING:  $\Delta$  INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT:  $\Delta$  IL INDIQUE LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRÉ DE SÛRETÉ DE L'APPAREIL, NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SÛRETÉ QUE PAR DES PIÈCES RECOMMANDÉES PAR LE FABRICANT



NOTE  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS 1/4W(J)  
 ALL CAPACITORS IN  $\mu$ F 50WV(J)  
 P =  $\mu$ F

AP-007  
 SCHEMATIC DIAGRAM  
 No.2-1 1541402A

