



Service Manual

RP-30H/HB



STEREO TURNTABLE

MODEL

RP-30H (Silver)

RP-30HB (Brown)

RP-30X (Silver)

RP-30XB (Brown)

In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

SPECIFICATIONS

GENERAL

Type: Direct-driven automatic signature play turntable

Power supply source: AC 110V/220V/240V, 50Hz (H/HB)
AC 110V/220V/240V, 50Hz/60Hz (X/XB Only)

Power rating: 10 watts

Dimensions: 430 mm width
124 mm height (including dust cover)
370 mm depth

Weight: 6.5 kilograms, including dust cover

DRIVING SYSTEM

Motor: DC-servo motor with frequency generator

Speeds: 33-1/3 r.p.m. and 45 r.p.m.

Wow and flutter: $\pm 0.06\%$ (DIN)
0.04% (WRMS)

Rumble: 60 dB (DIN "B")

Turntable: 30 cm die-cast aluminium,

TONARM

Type: Statically balanced tubular arm

Effective length: 215 mm

CARTRIDGE

Frequency response: 20 Hz ~ 20,000 Hz

output: 3 milli volts

Channel separation: 20 dB

Tracking force: 2 grams (recommended)

Impedance: 47K ohms

Specifications are subject to change without prior notice.

SHARP CORPORATION OSAKA, JAPAN

LAYOUT OF PARTS

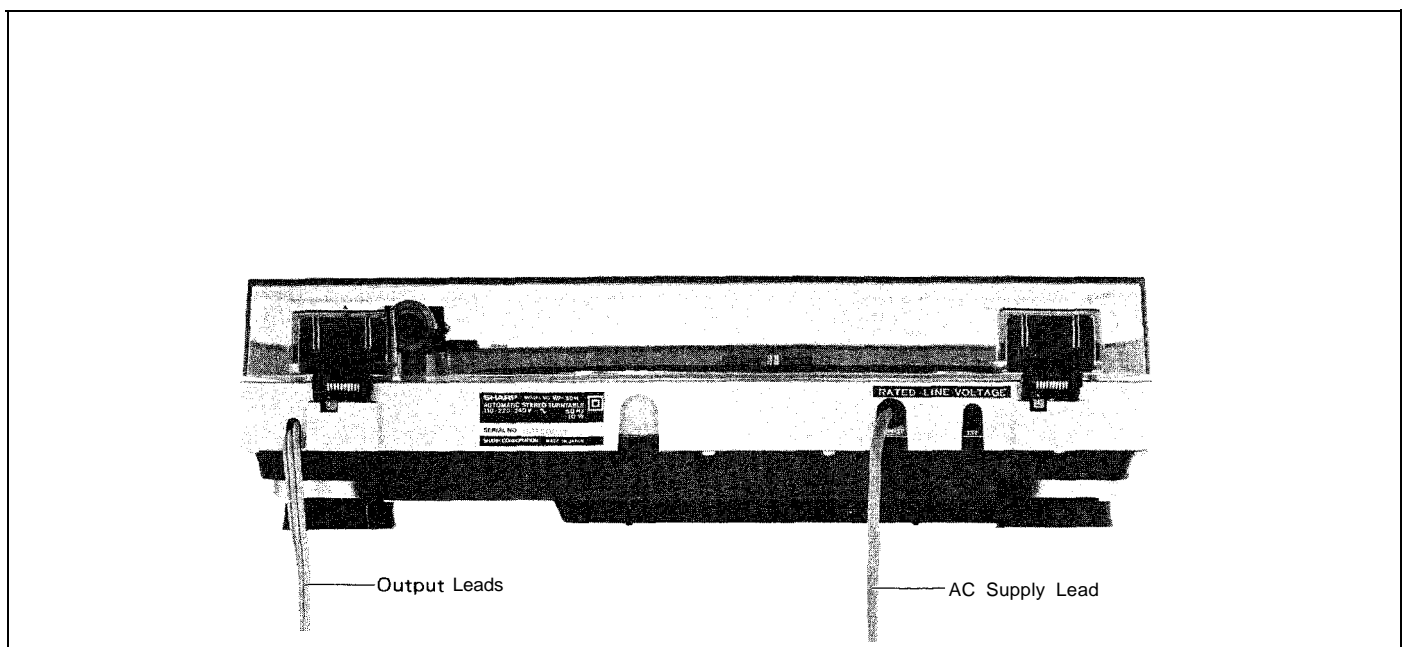
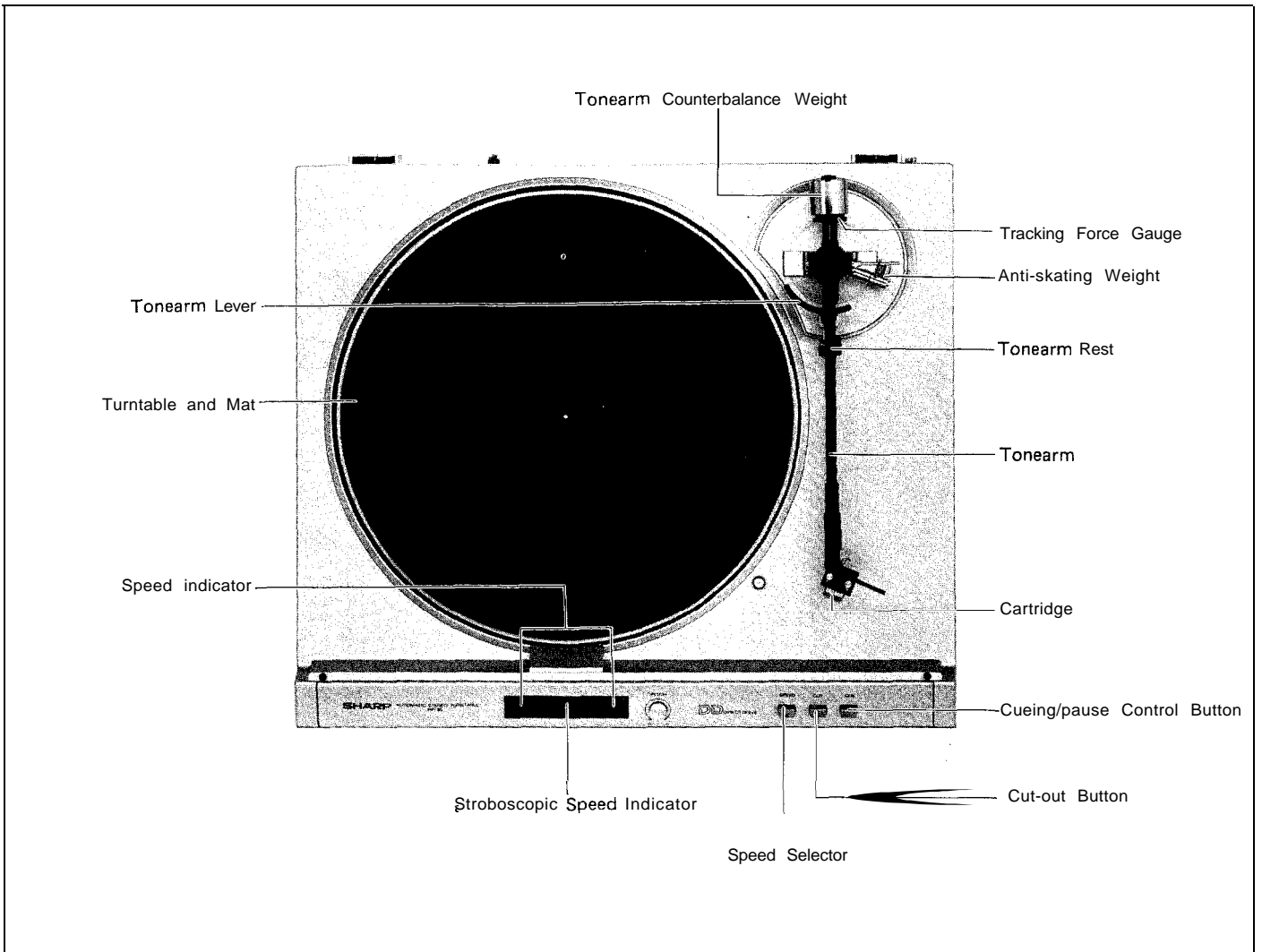


Figure 2-2

AC MAINS VOLTAGE

The unit is designed to operate from 110V, 220V or 240V A.C. mains.

Check the AC voltage level setting at rear of unit before plugging in supply lead. If necessary, adjust selector to correspond to the AC supply voltage of your area.

If the AC supply lead is already plugged into an AC supply outlet, unplug it before checking the voltage.

Selector adjustment:

The voltage selector is on the rear of the unit. Turn the selector with a screwdriver in either direction until the correct voltage can be read in the window next to the adjustment screw.

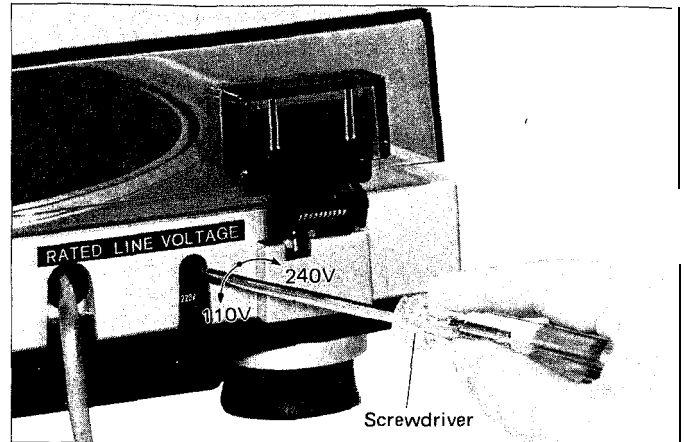


Figure 3-1

NOTE FOR USERS IN THE UK

IMPORTANT:

The following colour code is used for the wires in the mains lead of this apparatus:

BLUE: "NEUTRAL"

BROWN: "LIVE"

CONNECTING PLUG TO MAINS LEAD:

If the colours of the wires in the mains lead of this apparatus do not correspond with the coloured markings identifying the terminals in the plug, proceed as follows:

* Connect the wire coloured BLUE to the terminal marked with the letter N or coloured BLACK.

* Connect the wire coloured BROWN to the terminal marked with the letter L or coloured RED.

Use a 3A fuse in the mains plug or distribution board to protect this apparatus.

Please note that this apparatus has been adjusted in the factory for 240 Volt (50 Hz) mains supply.

DISASSEMBLY

■ DUST COVER REMOVAL

Open the dust cover and pull it.

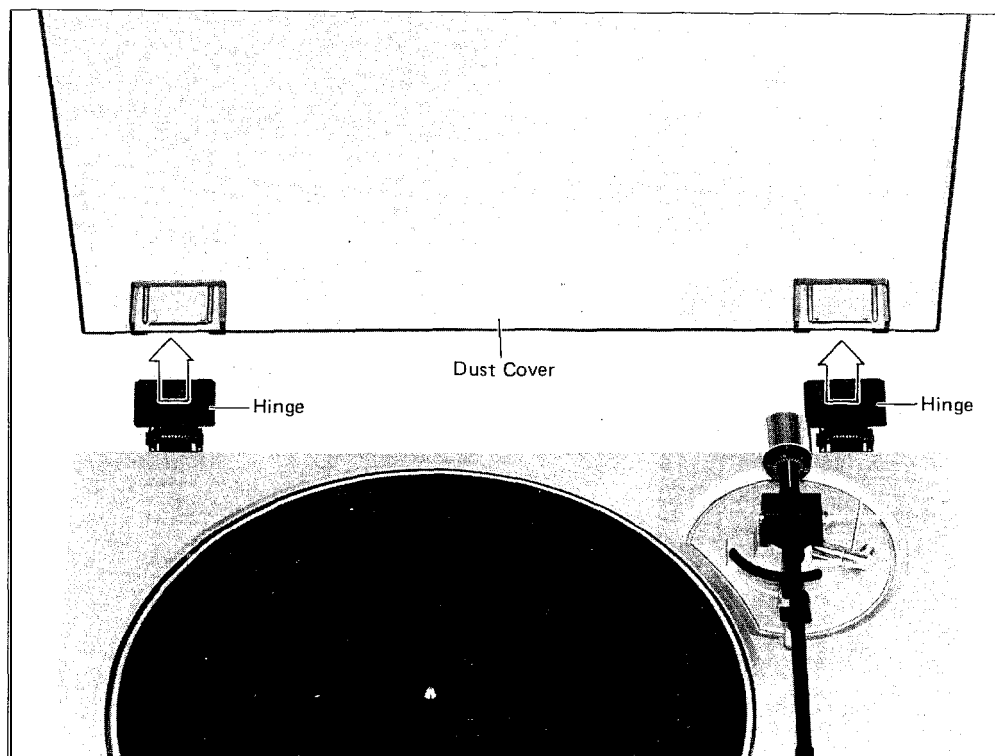


Figure 3-2

■ **REMOVAL OF BOTTOM PLATE** (Refer to Figure 4-1)

1. Turn over the set after removing the turntable, but with the dust cover left as it is without fail.
2. Remove the 13 screws retaining the bottom plate, then it can be detached.

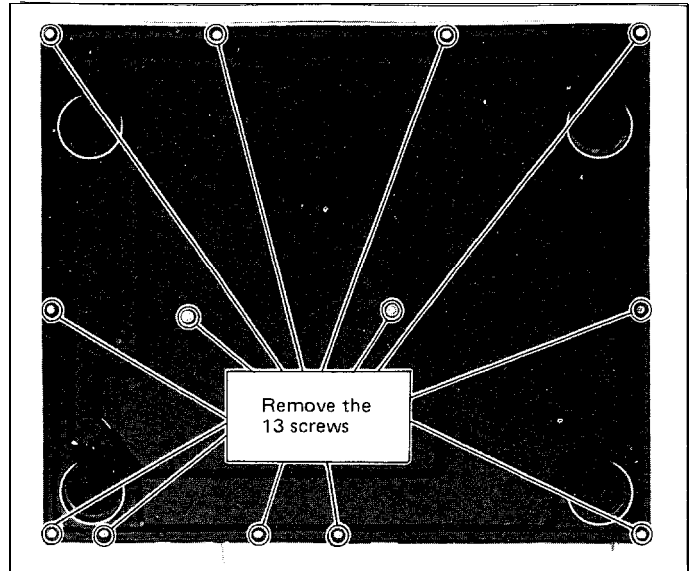


Figure 4-1

SETTING

■ **SETTING OF CARTRIDGE**

(Refer to Figure 4-2 and Figure 4-3)

1. Connect the output leads, at the end of the tonearm, to the cartridge.
2. Put the cartridge into the headshell in such a way as to allow the stylus tip to come just above the stylus tip adjusting point (A)

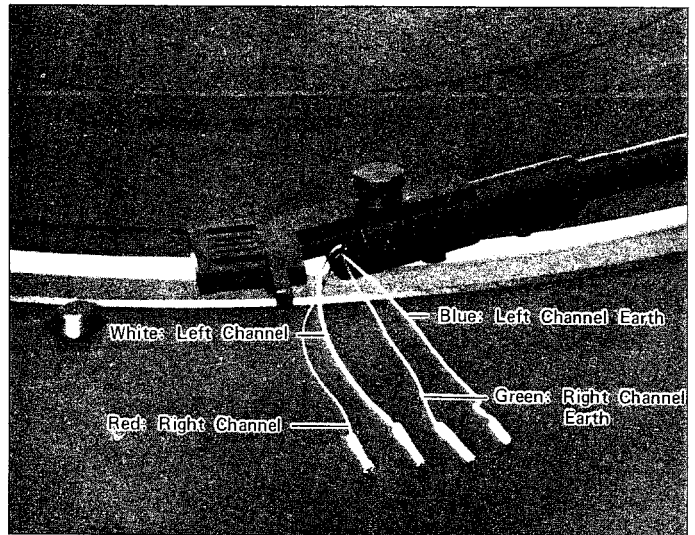


Figure 4-2

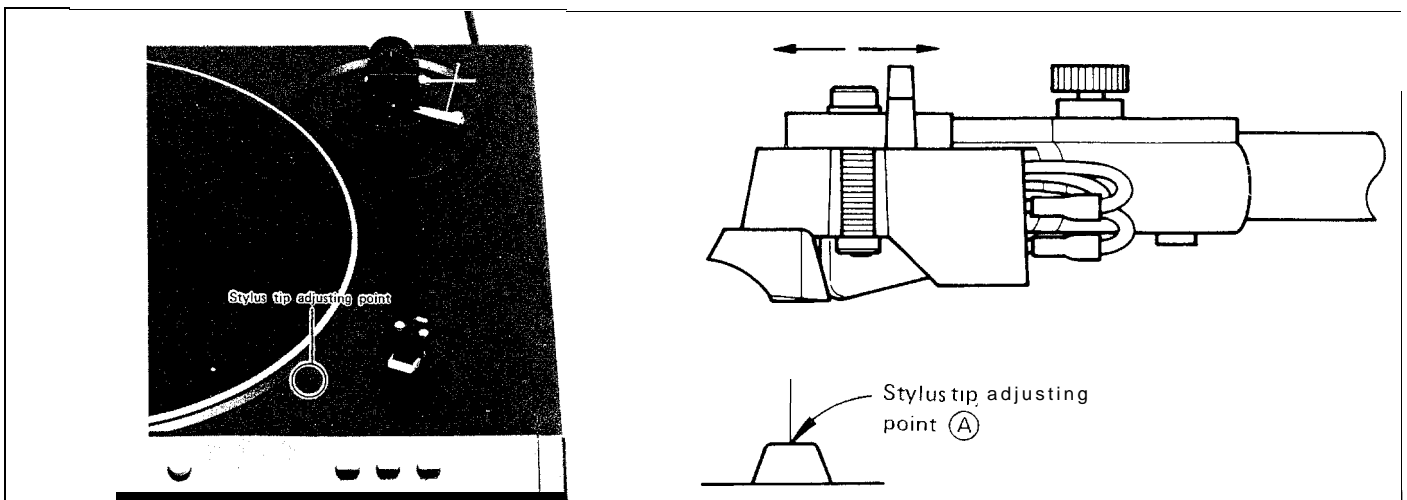


Figure 4-3

ADJUSTMENT

■ HEIGHT ADJUSTMENT OF STYLUS TIP

(Refer to Figure 5-1)

It may happen that the stylus tip doesn't leave the record surface when the cueing/pause control button is set at "on" or it doesn't go down to the record when that button is set at "off". In this case, make the height of the stylus tip appropriate by changing the movable range (height) of the tonearm lever.

1. Set the cueing/pause control button at "on" position to raise up the tonearm.
2. By using a screwdriver, turn the adjusting nut (A) at the tonearm lever to change its height: this change will provide a proper height of the stylus tip.

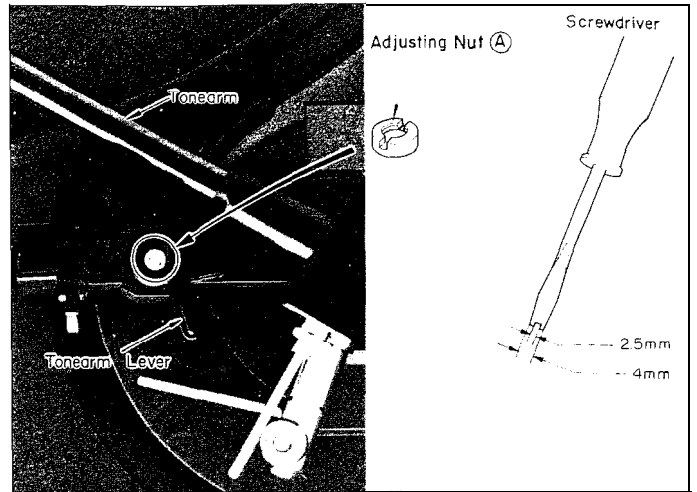


Figure 5-1

■ ADJUSTMENT OF AUTO-RETURN OPERATION

(Refer to Figure 5-2 and Figure 5-3)

For a normal auto-return operation, the tonearm must, at the end of a record playing, return automatically to its rest and at the same time the turntable be stopped. However, it may happen that the auto-return operation starts even before a record playing has not yet finished, or it never occurs even after a completion of the playing. In this case, take the following adjustments.

1. Detach the turntable, and see there is not contact between the teeth of the turntable shaft gear and those of the tonearm return gear. If otherwise turn the adjusting screw (A) until the turntable shaft can rotate smoothly.

* In case the auto-return motion starts even before a record has not yet reached its end, turn the adjusting screw (B) to make wider the interval (a) between the arm control lever's end and operation arm.

* In case the auto-return operation never starts even after a record has reached its end, turn the adjusting screw (B) to make narrower the interval (a) between the arm control lever's end and operation arm.

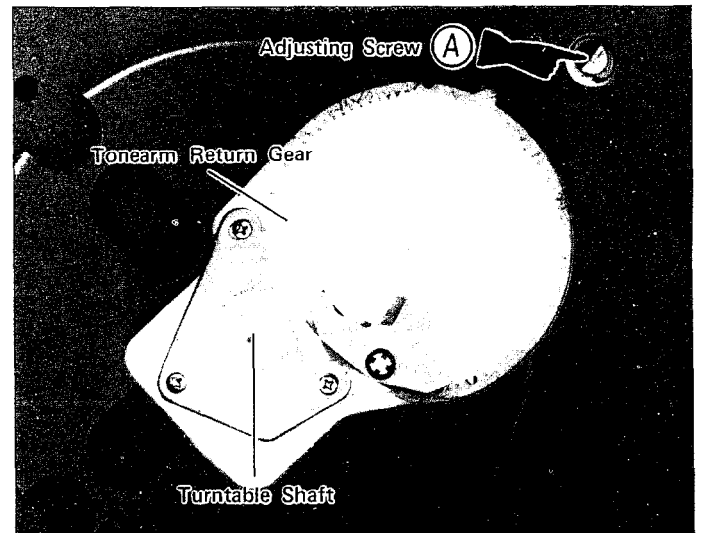


Figure 5-2

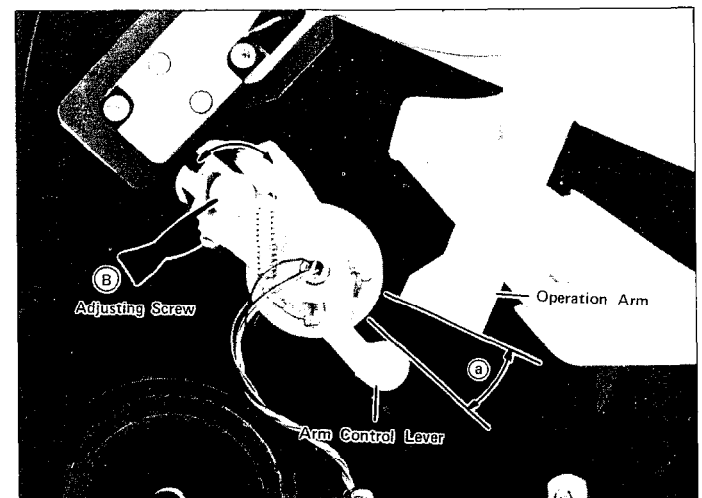


Figure 5-3

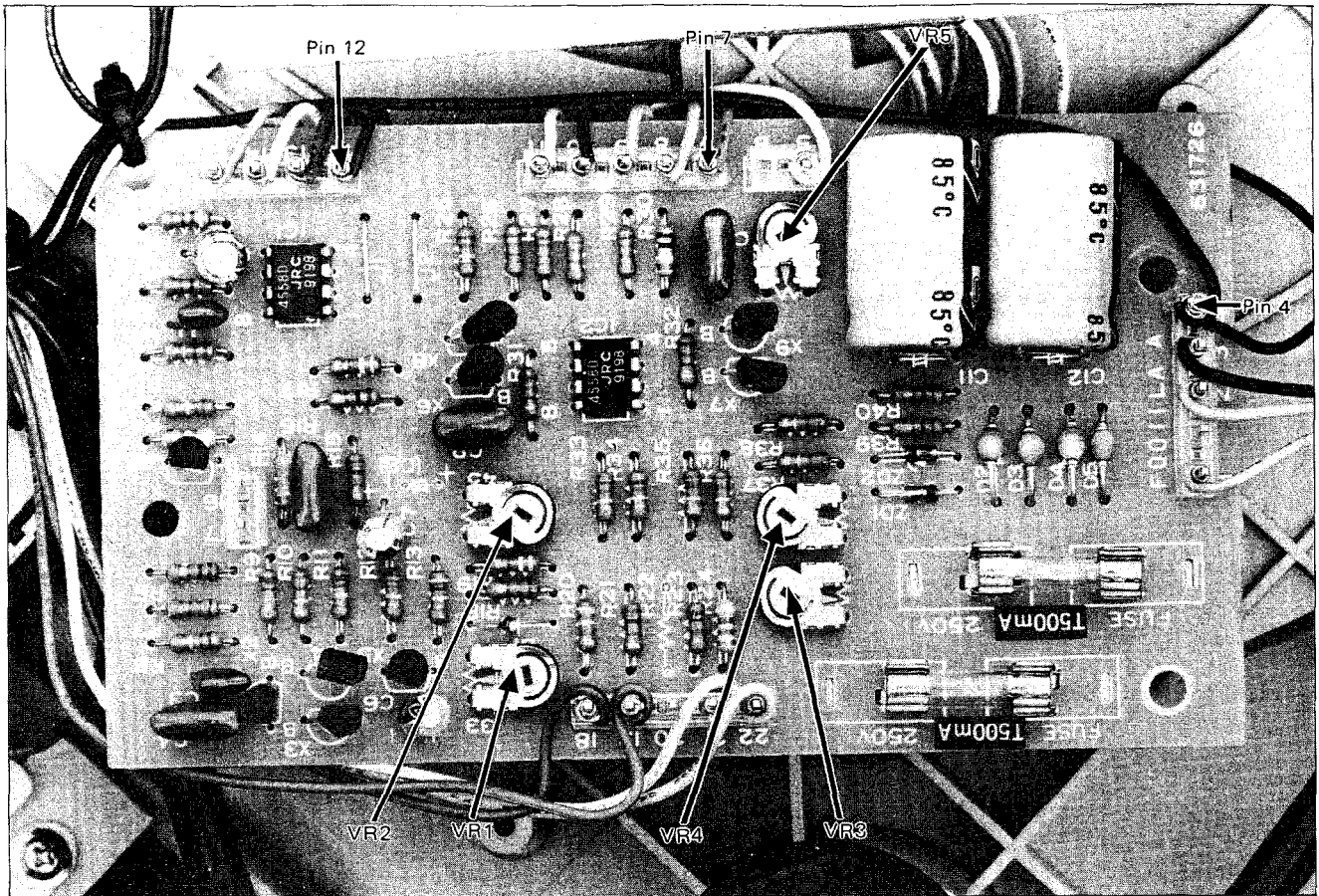


Figure 6-1

ROTATIONAL SPEED ADJUSTMENT OF TURNTABLE DRIVE MOTOR

1. Set the power switch to "ON" position.
2. Push the cue/pause control button to raise the tonearm, and swing the tonearm from its rest to a position over the outer edge of record by hand.
3. Switch the speed selector to "33-1/3 rpm" or "45 rpm" position. A correct speed is achieved when dots in the stroboscopic viewer become apparently motionless.
4. If dots are moving, in either direction, adjust the fine speed control until dots appear motionless.
5. If the fine speed control is still insufficient for the adjustment, use the semi-variable resistor (VR1: 33-1/3 rpm or VR2: 45 rpm) on the motor drive circuit board as follows:
 - 5-1. Set the fine speed control to "mechanical center" position.
 - 5-2. Switch the speed selector to "33-1/3 rpm" or "45 rpm" position.
 - 5-3. Adjust the semi-variable resistor (VR1: 33-1/3 rpm or VR2: 45 rpm) until dots appear motionless.
6. Finally return the tonearm to its rest manually, or push the cut-out button.

ADJUSTMENT OF TURNTABLE DRIVE MOTOR DRIVE CIRCUIT

1. If wow and flutter effect of the turntable drive motor is inferior to the specified value, correct it in the following way.
2. Connect the inputs of a dual-beam synchroscope between pins 4 (earth side) and 7, and between pins 4 (earth side) and 12

3. Set the power switch to "ON" position.
4. Push the cue/pause control button to raise the tonearm. Bring the tonearm from its rest to a position over the outer edge of record by hand.
5. Adjust the semi-variable resistors (VR3 and VR4) so that both output waveforms at pins 7 and 12 become symmetrical in up and down direction with the value 0 V as a center, respectively.
6. Adjust the semi-variable resistor (VR5) so that output waveforms at pins 7 and 12 will be the same in size.

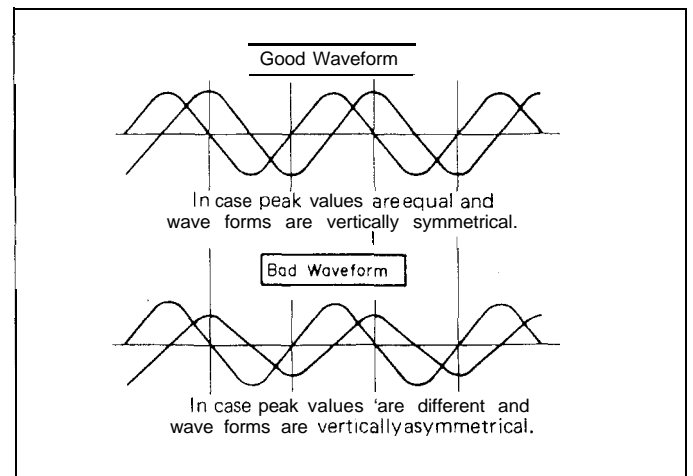


Figure 6-2

DIRECT DRIVE MOTOR CONTROL CIRCUIT

(1) Frequency generator

Consists of 72-pole magnet, multigap head having 36 pairs of yokes, and coils. The 20 Hz sine wave is generated when playing the LP record, and the 27 Hz sine wave when playing the EP record.

| | | | |
|----|------|---|-----|
| LP | 0.62 | V | P-P |
| EP | 0.84 | V | P-P |

(2) Saw tooth generator circuit

This circuit consists of a charging circuit which comprises capacitor and resistor and a switching transistor which discharges in a short time the voltage charged up into the capacitor. The saw tooth wave is generated having a peak value that is in proportion to its frequency.

| | | |
|----|-----|---|
| LP | 3.2 | V |
| EP | 2.4 | V |

(3) Reference voltage circuit

Circuit by which the voltage for deciding the rpm of the motor is obtained; the output of the constant voltage circuit is fed through a resistance type voltage divider so that a more constant voltage is acquired.

The circuit is so designed that the divided voltage proportion can be continuously varied by the external variable resistor (this depends upon the fact of the frequency itself being made variable in the circuit interior).

| | | |
|-----|-----|---|
| L P | 3.2 | V |
| E P | 2.4 | V |

(4) Comparator circuit

Consists of a differential comparator circuit and a piece of switching transistor. This circuit compares the peak value of saw tooth wave with the reference level; when the former is lower than the latter, this circuit is turned off, and when higher, it is turned on so that the frequency variation (i.e., rpm variation) is obtained as a variation of the average value of the output pulse.

(5) Position detector circuit and motor drive circuit

The position detector circuit detects a location of the rotor magnet by the Hale element, and determines an order of feeding the current into two drive coil.

The current fed to the Hale element, on the other hand, is controlled by the low-pass filter, the output voltage of the Hale element is varied according to the rpm variation, and that output voltage is amplified by the operational amplifier (IC2) to feed the current to the drive coils.

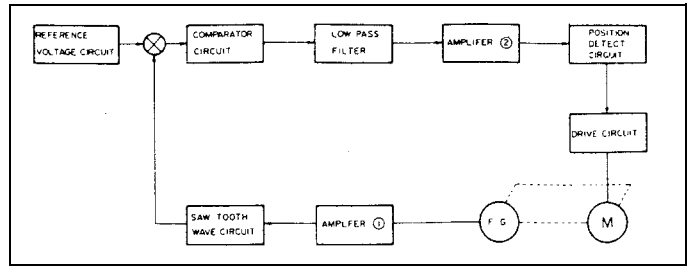


Figure 7-1

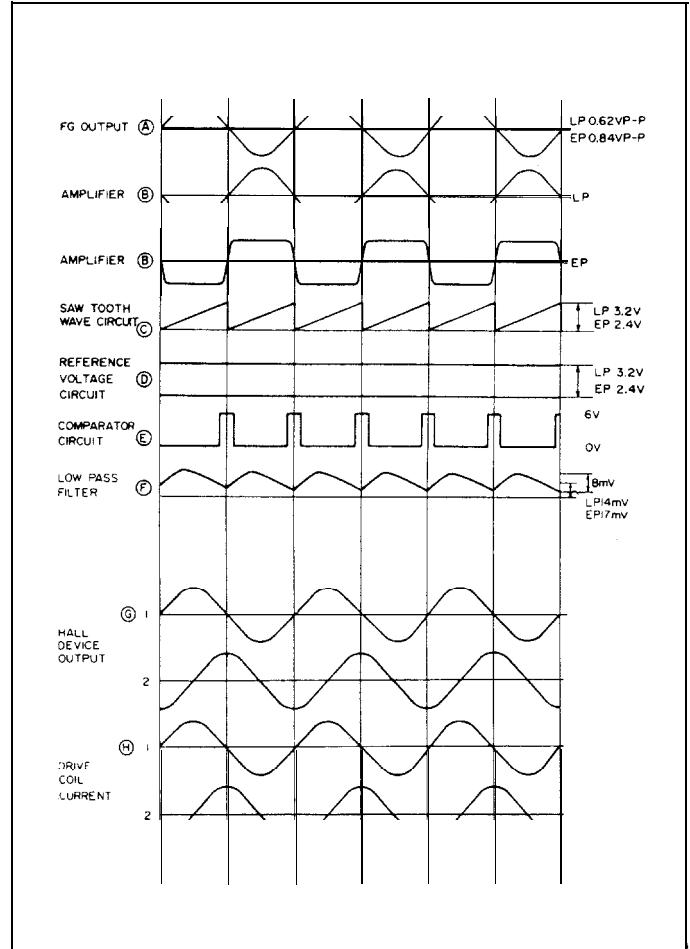


Figure 7-2

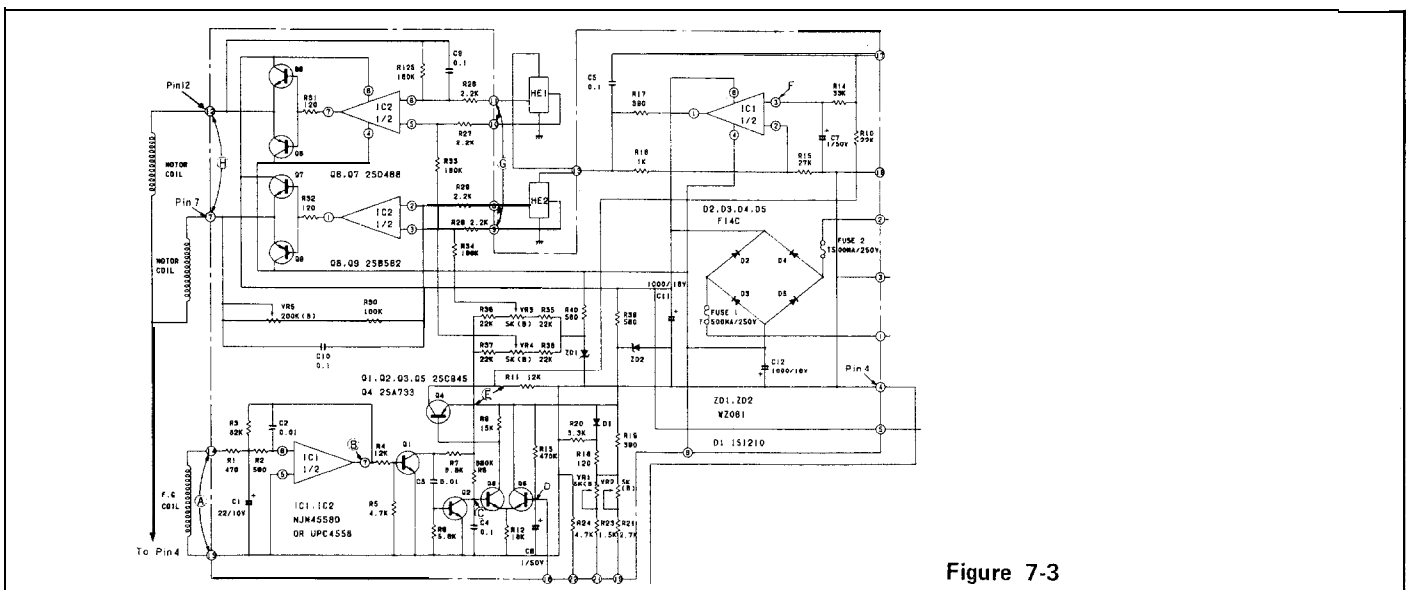
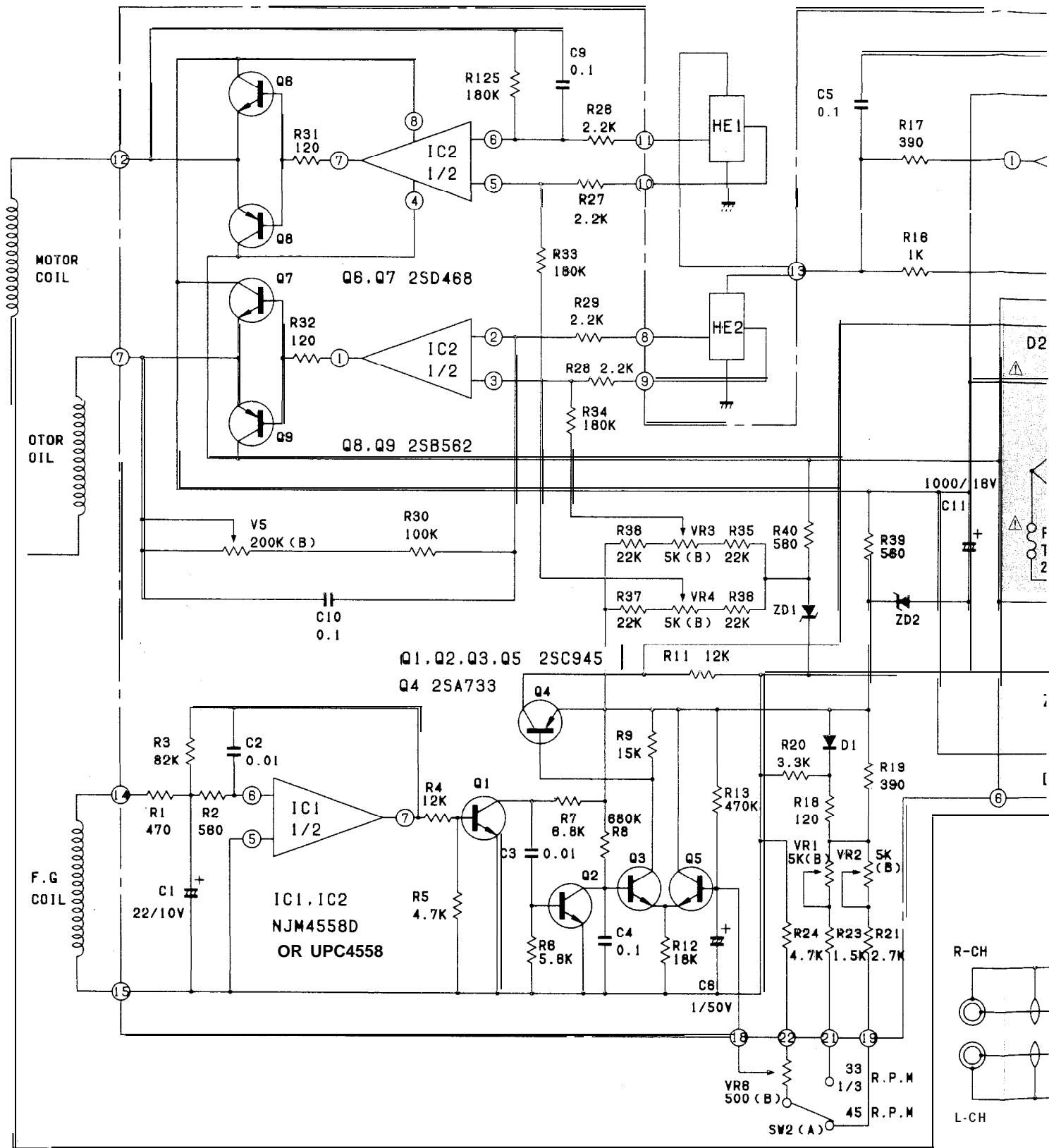


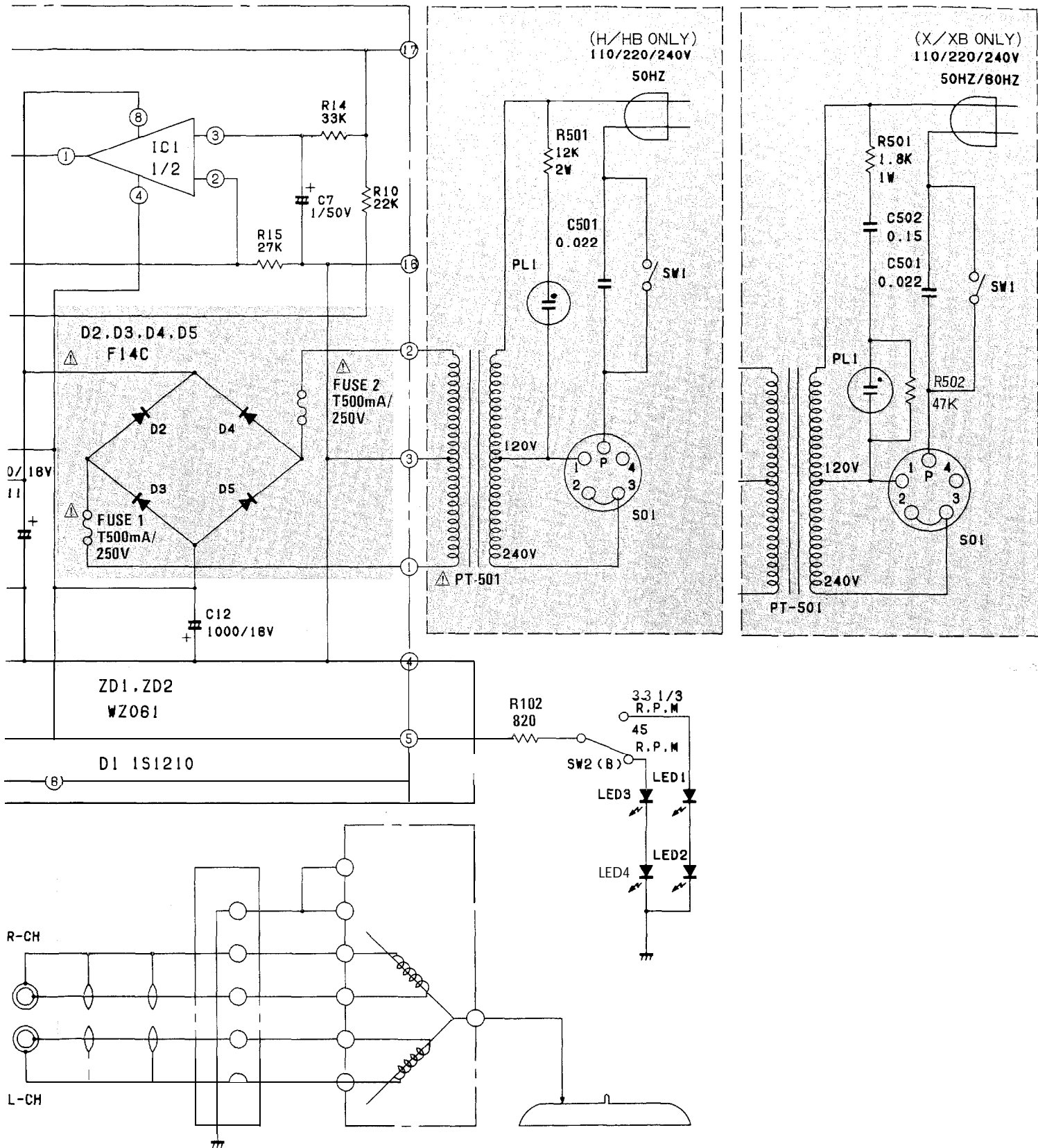
Figure 7-3



1. SW1 : Main switch shown in "off" position
2. SW2 (A, B): Speed selector switch shown in "33-1/3r.p.m." position,

(Specifications or wiring diagrams of this model are subject to change for the irr

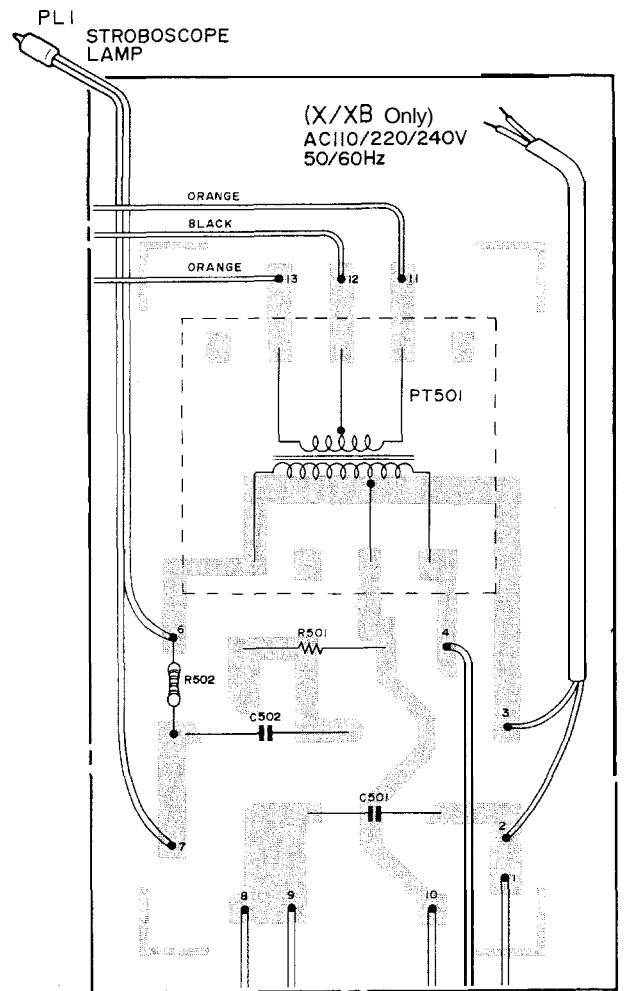
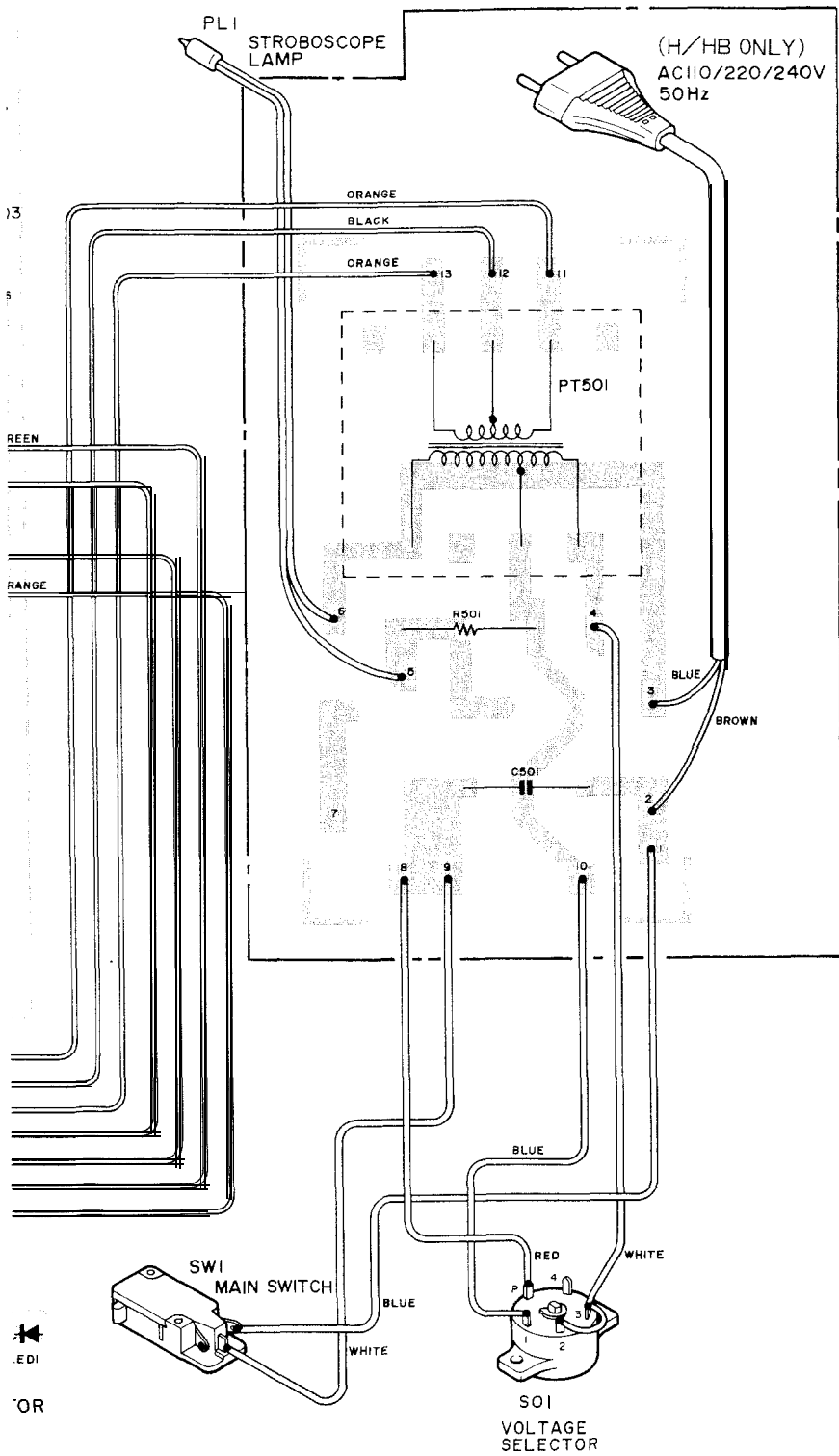
Figure 8 SCHE



osition.
ange for the improvement without prior notice.)

* Be sure to use regular parts for securing the safety and reliability of the set. Parts marked with "⚠" and parts cross-hatched (in black) are especially important for maintaining the safety and protecting abilities of the set. Be sure to replace them with parts of specified part number.

Figure 8 SCHEMATIC DIAGRAM



PRINTED WIRING BOARD

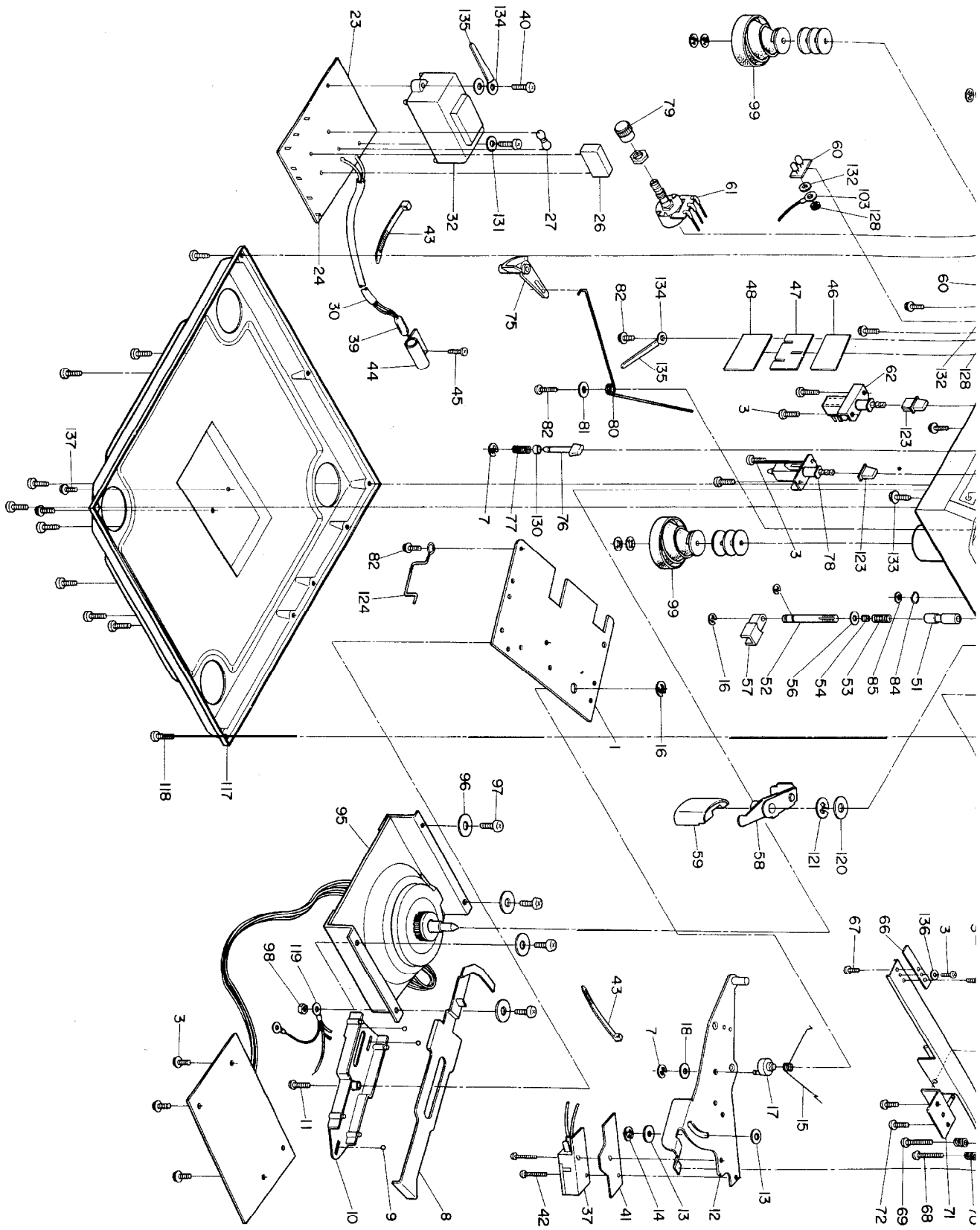
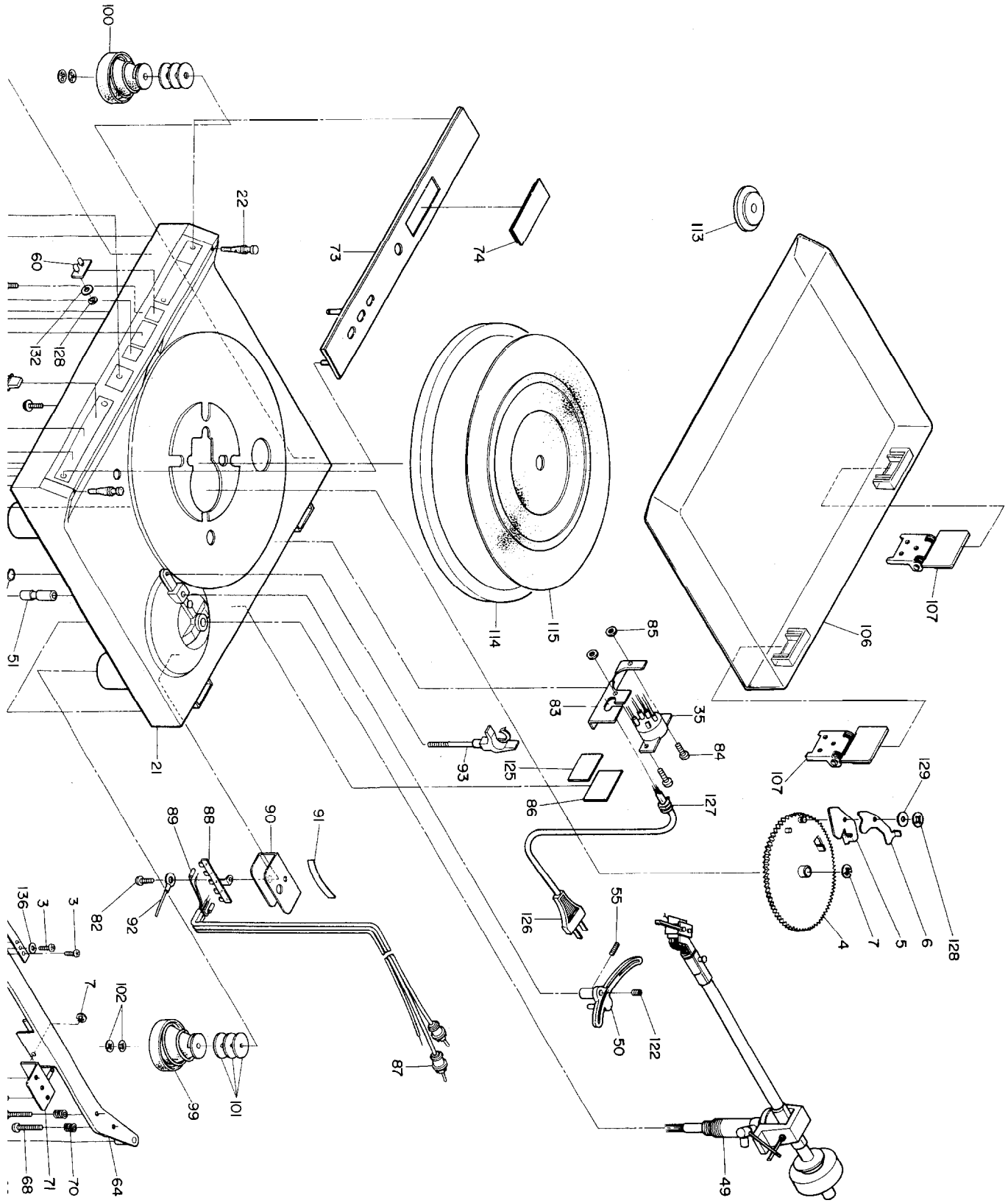


Figure 10 CABI



0 CABINET EXPLODED VIEW

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODE NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

NOTES:

Be sure to use regular parts for securing the safety and reliability of the set. Parts marked with "△" and parts cross-hatched (in black) are especially important for maintaining the safety and protecting ability of the set. Be sure to replace them with parts of specified part number.

| REF. NO. | PART NO. | DESCRIPTION | CODE | REF. NO. | PART NO. | DESCRIPTION | CODE |
|------------------------------------|---|--|------|--------------------------------|----------------|---|------|
| INTEGRATED CIRCUITS | | | | CONTROLS | | | |
| ICI, } IC2 } or | VHINJM4558D-1 91ZμPC4558C, 91ZμPC1458C, 91ZRC4558P | Operation Amplifier (NJM4558D or μPC4558C, μPC1458C, RC4558P) | AH | VR1 | 91ZV8K4-1 5K | Speed Adjust, 33-1/3 r.p.m., 5K(B) ohm | AE |
| | | | | VR2 | 91ZV8K4-1 5K | Speed Adjust, 45 r.p.m. 5K(B) ohm | AE |
| | | | | VR3, VR4 | 91ZV8K4-1 5K | Motor Coil Current Balance Adjust, 5K(B) ohm | AE |
| | | | | VR5 | 91ZV8K4-1 200K | Motor Coil Current Adjust. 200K (B) ohm | AE |
| | | | | VR6 | 912703062 | Pitch (Fine Speed) Control, 500 (B) ohm | AG |
| TRANSISTORS | | | | TRANSFORMER | | | |
| Q1(X1) | 91Z2SC945K or (91Z2SC945L, 91Z2SC2308B, 91Z2SC2308C) | Amplifier (2SC945K or 2SC945L, 2SC2308B, 2SC2308C) | AD | △PT-501 | 91Z872560 | Power | AY |
| Q2, } Q3 } or (X2, } X3) | 91Z2SC945K 91Z2SC945L, 91Z2SC2308B, 91Z2SC2308C | Saw Tooth Wave Generator (2SC945L or 2SC945K, 2SC2308B, 2SC2308C) | AD | ELECTROLYTIC CAPACITORS | | | |
| Q4(X4) | 91Z2SA733Q or (91Z2SA733P, 91Z2SA641F, 91Z2SA641H, 91Z2SA844B, 91Z2SA844C) | Comparator (2SA733Q or 2SA733P, 2SA641F, 2SA641H, 2SA844B, 2SA844C) | AE | CI | VCEAAU1AW226Y | 22MFD, 10V, +50-10% | AB |
| Q5(X5) | 91Z2SC945K or (91Z2SC945L, 91Z2SC2308B, 91Z2SC2308C) | Comparator (2SC945K or 2SC945L, 2SC2308B, 2SC2308C) | AD | C6 | VEEAAU1HW105A | 1MFD, 50V, +75-10% | AB |
| Q6, Q7 } or (X6, } X7) | 91Z2SD468B (91Z2SD468C) | Driver (2SD468B or 2SD468C) | AF | C7 | VCEAAU1HW105A | 1MFD, 50V, +75-10% | AB |
| Q8, Q9 } or (X8, } X9) | 91Z2SB562B (91Z2SB562C) | Driver (2SB562B or 2SB562C) | AG | CI 1 | VCEAAU1CW108Y | 1000MFD, 16V, +50-10% | AC |
| | | | | C12 | VCEAAU1CW108Y | 1000MFD, 16V, +50-10% | AC |
| DIODES | | | | CAPACITORS | | | |
| D1 | 91Z1S1210 | Temperature Compensation (1S1210) | AD | C2 | VCQYKU1HM103K | .01MFD, 50V, ±10%, Mylar | AA |
| D2, } D3, } or D4, } D5 } | 91ZW03B (91ZW03C, 91ZF14C) | Rectifier (W03B or W03C, F14C) | AD | C3 | VCQYKU1HM103K | .01MFD, 50V, ±10%, Mylar | AA |
| LIGHT EMITTING DIODES | | | | RESISTORS | | | |
| LED1, LED2 | 912898622 | Speed indicator, 33-1/3 r.p.m. (PR4133S) | AG | R1 | VRD-ST2EE471J | 470 ohm | |
| LED3, LED4 | 912898622 | Speed indicator, 45 r.p.m. (PR4133S) | AG | R2 | VRD-ST2EE561J | 560 ohm | |
| | | | | R3 | VRD-ST2EE823J | 82K ohm | |
| | | | | R4 | VRD-ST2EE123J | 12K ohm | |
| | | | | R5 | VRD-ST2EE472J | 4.7K ohm | |
| | | | | R6 | VRD-ST2EE562J | 5.6K ohm | |
| | | | | R7 | VRD-ST2EE682J | 6.8K ohm | |
| | | | | R8 | VRD-ST2EE684J | 680K ohm | |
| | | | | R9 | VRD-ST2EE153J | 15K ohm | |
| | | | | R10 | VRD-ST2EE223J | 22K ohm | |
| | | | | R11 | VRD-ST2EE123J | 12K ohm | |
| | | | | R12 | VRD-ST2EE183J | 18K ohm | |
| | | | | R13 | VRD-ST2EE474J | 470K ohm | |

PARTS LIST

| REF. NO. | PART NO. | DESCRIPTION | DDE | REF. NO. | PART NO. | DESCRIPTION | ODE |
|----------|---------------|---|-----|-------------|------------------|---|-----|
| R14 | VRD-ST2EE333J | 33K ohm | | 19-E | 91ZMC-3902 | Weight, Anti-skating | AN |
| R15 | VRD-ST2EE272J | 2.7K ohm | | 50 | 91Z897687-1 | Tonearm Lever | AE |
| R16 | VRD-ST2EE102J | 1K ohm | | 51 | 912897706 | Shaft, Tonearm Lever | AF |
| R17 | VRD-ST2EE391J | 390 ohm | | 52 | 912898639 | Rod, Tonearm Lever | AD |
| R18 | VRD-ST2EE121J | 120 ohm | | 53 | 912897905 | Spring, Tonearm Lever | AB |
| R19 | VRD-ST2EE391J | 390 ohm | | 54 | 91ZE-287680 | Spring, Shaft | AA |
| R20 | VRD-ST2EE332J | 3.3K ohm | | 57 | 912898494 | Lever, Tonearm Lever Rod | AD |
| R21 | VRD-ST2EE272J | 2.7K ohm | | 58 | 91Z893583-3 | Arm Control Lever, Assembly | AK |
| R23 | VRD-ST2EE152J | 1.5K ohm | | 59 | 912894756 | Cover, Arm Control Lever | AC |
| R24 | VRD-ST2EE472J | 4.7K ohm | | 34 | 912872322 | Seesaw Lever, Assembly | AG |
| R25 | VRD-ST2EE184J | 180K ohm | | 36 | 91Z897312-1 | Plate Spring, Seesaw Lever | AC |
| R26 | VRD-ST2EE222J | 2.2K ohm | | 70 | 91ZE-813681 | Spring, Seesaw Lever | AB |
| R27 | VRD-ST2EE222J | 2.2K ohm | | 71 | 912897853 | Bracket, Seesaw Lever | AE |
| R28 | VRD-ST2EE222J | 2.2K ohm | | 73 | 91Z851864-1 | Panel (H/X only) | AU |
| R29 | VRD-ST2EE222J | 2.2K ohm | | 73) | 91Z851864-2 | Panel (HB/XB only) | AU |
| R30 | VRD-ST2EE104J | 100K ohm | | 74 | 912898493 | Window, Stroboscopic Speed Indicator | AF |
| R31 | VRD-ST2EE121J | 120 ohm | | 75 | 912898492 | Lever, Reset | AE |
| R32 | VRD-ST2EE121J | 120 ohm | | 76 | 91Z898491 | Button, Cut-out | AG |
| R33 | VRD-ST2EE184J | 180K ohm | | 77 | 912897848 | Spring, Cut-out Button | AB |
| R35 | VRD-ST2EE184J | 180K ohm | | 78 | 912897253 | Switch, Cueing/Pause Control | AQ |
| R36 | VRD-ST2EE223J | 22K ohm | | 79 | 91Z892618-5 | Knob, Pitch (Fine Speed) | AL |
| R37 | VRD-ST2EE223J | 22K ohm | | 30 | 912899460 | Spring, Reset Lever | AE |
| R38 | VRD-ST2EE223J | 22K ohm | | 33 | 912898495 | Bracket, Voltage Selector Bushing | AD |
| R39 | VRD-ST2EE561J | 560 ohm | | 36 | 912898496 | Plate | AD |
| R40 | VRD-ST2EE561J | 560 ohm | | 36) | 91Z899362-1 | Plate (HB only) | AD |
| R102 | VRD-ST2EE821J | 820 ohm | | | 91Z899362-2 | Plate (X only) | AD |
| R501 | 91Z895839-1 | 12K ohm, 2W, ±10%, Metal Oxide Film (H/HB only) | AC | | 91Z899362-3 | Plate (XB only) | AD |
| (R501) | VRS-PT3AB182K | 1.8K ohm, 1W, ±10%(X/XB only) | A A | 37 | 91Z894205-1 | Output Leads | AN |
| R502 | VRD-ST2EE473J | 47K ohm, 1/4W, ±5% | A A | 38 | 91ZD-10002-51 | Terminal Strip, 5-lug | AC |
| | | | | 32 | 912894129 | Earth Lead Wire, Assembly | AC |
| | | | | 33 | 912898606 | Tonearm Rest | AG |
| | | | | 35 | 91 ZDDM-511 F-66 | Motor | BR |
| | | | | 39 | 91Z895773-5 | Leg | AL |
| | | | | 100 | 91Z895773-6 | Leg | AL |
| | | | | 106 | 912851863 | Dust Cover | BF |
| | | | | 107 | 91Z898532-1 | Hinge, Assembly | AN |
| | | | | 113 | 912898076 | EP Adapter | AC |
| | | | | 114 | 91Z620049-2 | Turntable (50Hz only) | BF |
| | | | | 114) | 91Z620049-5 | Turntable (50/60Hz, X/XB only) | BF |
| | | | | 115 | 912872311 | Mat, Turntable | AQ |
| | | | | 117 | 912847688 | Plate, Bottom | AV |
| | | | | 119 | 912899459 | Earth Lead Wire, Assembly | AD |
| | | | | 122 | 912896268 | Nut, Tonearm Lever | AC |
| | | | | 123 | 912898490 | Button, Cueing/Pause Control Speed Selector | AG |
| | | | | 124 | 912898297 | Stopper, Spring of Reset Lever | AD |
| | | | | 125 | 91Z898496-2 | Fiber, Plate | AL |
| | | | | 126 | QACCB0054AF09 | Mains Supply Cord (SUK) | AK |
| | | | | | QACCV0001AGZZ | Mains Supply Cord (SEEG) | AL |
| | | | | (126) | QACCL0001AFZZ | AC Supply Cord (SAA) | AL |
| | | | | | QACCC0002TA0F | AC Supply Cord (EX CA) | AG |
| | | | | | QACCC0053AF00 | AC Supply Cord (EX,MAA) | AK |
| | | | | 127 | 91Z895168-3 | Bushing, Mains Supply Cord | AC |
| | | | | SW1 | 91Z895430-1 | Switch, Main | AK |
| | | | | SW2 } (A,B) | 91Z851105-1 | Switch, Speed Selector | AN |
| | | | | SO1 | QSOCE0551AFZZ | Socket, Voltage Selector | AG |
| | | | | | TINSLO165AFZZ | Operation Manual, English German/French | AL |
| | | | | | TINSZ0206AFZZ | Operation Manual, Swedish | |
| | | | | | 91Z-HARICOV1 16 | Stylus Cover | AC |

FUSES

| | | | |
|----------|-----------|-------------------|----|
| F1, ΔF2, | 91Z892171 | Fuse, T500MA/250V | AG |
|----------|-----------|-------------------|----|

MISCELLANEOUS

| | | | |
|------|----------------|---|----|
| 1 | 9 12899354 | Sub Chassis, Assembly | AV |
| 4 | 9 12895248 | Gear, Tonearm Return | AN |
| 5 | 9 12894901 | Clutch Plate | AE |
| 6 | 9 12894902 | Guide, Clutch Plate | AE |
| 8 | 91Z870933-1 | Operation Arm | AH |
| 10 | 91Z870932-1 | Guide, Operation Arm | AE |
| 12 | 91Z896487-1 | Operation Lever, Assembly | AH |
| 15 | 912895251 | Spring, Operation Lever | AC |
| 17 | 912895073 | Eccentric Screw, Tonearm Auto-return Adjustment | AC |
| 21 | 91Z847687 | Cabinet (H/X only) | BD |
| (21) | 91Z847687-1 | Cabinet (HB/XB only) | BD |
| 22 | 912898586 | Cushion Rubber, Cabinet Top | AC |
| 39 | 91Z896482-1 | Stroboscope Lamp, Neon | AN |
| (39) | 91Z894001-7 | Stroboscope Lamp, Neon (X/XB only) | AN |
| 41 | 9 12893803 | Sheet, insulator | AC |
| 43 | 9 12894408 | Wire Holder | AC |
| 44 | 9 12897722 | Holder, Stroboscope Lamp | AD |
| 46 | 9 12898608 | Window, Transparent | AD |
| 47 | 9 12898609 | Holder, Mirror | AD |
| 48 | 91Z897744-1 | Mirror, Stroboscope Lamp | AD |
| 49 | 912851909 | Tonearm Assembly | BH |
| 49-A | 91ZCART-116 | Cartridge | AY |
| 49-B | 91ZSTY-116 | Stylus | AX |
| 49-c | 91ZMB-1963A | Headshell | AZ |
| 49-D | 91ZMWEIGHT1266 | Weight with Tracking Force Gauge, Assembly | AX |