

SERVICE MANUAL

stereo turntables

PS28**PS48****PS48A****PS68****PS68A****PS78**

1. Notice :

The following safety precautions must be followed to assure continued reliability and safety against fire and shock hazard :

- 1) Replacement parts used during servicing of this appliance must have identical characteristics as those offered and recommended by H. H. SCOTT, Inc.
- 2) Satisfactory and approved service procedures dictate that ALL PARTS, no matter how apparently unimportant, be replaced exactly as in the original design.

EXAMPLES :

- a) Braided glass tubing over resistors.
 - b) Heatsinks on transistors.
 - c) Ceramic tube spacers.
 - d) All mechanical parts, i.e. covers, brackets, etc.
- 3) A dielectric test is to be performed on each appliance following the re-assembly and before returning the unit to the customer.
 - 4) The dielectric test, to be performed on H. H. SCOTT, Inc. electronic components serviced in the U.S. and Canada for use in these countries, shall consist of not less than the following :*
- 1) A dielectric tester designed to supply not less than 1100 volts at 60 Hz and employing leakage current indicator/s is to be used.
 - 2) The tester is to be connected per the instructions enclosed with the instrument, or as follows :
 - a) The tester is connected to the power line receptacle, and the power switch is turned on.
 - b) Sufficient time is allowed for the tester supply to stabilize and then the output voltage is adjusted for 1080 volts.
 - c) Leads of the tester, usually marked GND and HV, are connected between chassis ground and both blades of the male plug of the power cord.
 - d) Switch tester to "test" and observe leakage indicator.

LEAKAGE CURRENT MUST NOT EXCEED 0.5 mA.

- * Dielectric tests made by service personnel in countries other than United States and Canada must use test equipment and procedures specified by the safety agency serving that country.

CAUTION : Remove head shell from tone arm before applying dielectric test.

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2. Specifications :

	PS-28	PS-48	PS-68	PS-78
Speed control %	None	± 3	± 3	± 3
Wow/flutter (WRMS)	0.07%	0.06%	0.05%	0.05%
S/N ratio (DIN B)	62 dB	63 dB	64 dB	64 dB
Tone arm length	213mm.	215mm.	215mm.	215mm.
Stylus pressure range	1.5-4 grams	1-3 grams	1-3 grams	1-3 grams
Anti skating range	0-4 grams	0-4 grams	0-4 grams	0-4 grams
Power consumption	10 Watts	3 Watts	6 Watts	8 Watts
Drive system	Belt	Belt	Direct	Direct

Recommended Equipment :

1. AC Vacuum tube voltmeter.
2. DC Millivolt meter or DMM.
3. Oscilloscope.
4. Volt-Ohm meter.
5. Wow/flutter meter.
6. Broadcast test record. (CBS labs STR 151 or equivalent).
7. Supply of light machine oil. (not motor oil).
8. Tube of grease. (LUBRIPLATE or equivalent).
9. Suitable hand tools, cables, variable power line transformer.
10. Suitable line voltage and current monitoring meters

3. General Information

This manual has been prepared to cover the various aspects of servicing four different H. H. SCOTT, Inc. turntables. Since the cartridge installation and tone arm balance procedures are included in the operator's manual supplied with each appliance purchased, only a general procedure has been included here. Cartridges are not normally supplied by H. H. SCOTT, Inc.

All models, except the Model No. PS-28 use a form of electronically controlled DC or AC motor, that provides accurate speed and pitch control, as well as simple electronic switching between the two speeds, 33 1/3 and 45 rpm.

The Model Nos. PS-28 and PS-48 are belt driven models, all others are direct drive.

All models are designed for playing a single 12 inch (30.48cm) diameter record, and may also be used to play records of smaller diameter. The tone arm will return to rest at the end of each play.

4. Maintenance

CAUTION : Before proceeding with any maintenance or service, disconnect power supply cord and provide stylus protection.

The tone arm assemblies, used in all models, are essentially maintenance free and require no routine service. The lateral bearing consists of a double race precision ball assembly, adjusted at the factory for zero end play. the vertical bearings are precision ball and cone, also pre-adjusted. Adjustment or lubrication is not recommended.

Maintenance is not normally required on the model PS-68 and PS-78 direct drive models, except for routine pickup stylus inspection and possible replacement.

Routine maintenance of the models PS-28 and PS-48 is usually limited to drive belt and stylus inspection and possible replacement.

4.1 Lubrication :

Friction points in these turntables are lubricated with high quality, extended life lubricants which will rarely need replacement. When the need is apparant, it will be necessary to remove the bottom cover, as well as the turntable and turntable mat.

Motors are to be re-lubricated with a suitable light machine oil. Other friction points, such as turntable spindle bearings, pivot points and cams, are to be re-lubricated with high quality white colored grease. A suitable type is sold in North America under the brand name LUBRIPLATE.

NOTE :

It is highly advisable to remove all old lubricant before adding the new. If this is not done, it is possible that the old lubricant will contaminate and cause premature failure of the new lubricant.

5. Service Adjustments (see also troubleshooting guide)

5.1. Turntable Speed :

Electronic control models may require service of control circuits. These can be treated in much the same way as a solid state audio amplifier.

5.2. Pickup Tracking :

Should there be a complaint regarding pickup tracking problems, check to determine that the cartridge is correctly mounted and that the stylus is clean and free of any accumulation of dust .

Also check for proper ANTI SKATING adjustment. (refer to cartridge manufacturer's specification or as noted 5.5 of this manual) .

5.3. Pickup Height :

All models include the AUTOMATIC RETURN at end of play feature, actuated by levers and cams .

The distance between pickup stylus and top surface of a single record in the arm return mode is typically 5/16 inch (8 mm). Adjustment of this elevation is accomplished by means of cam screws. Screws adjustment, or in some models, only by bending a metal tab on the lift arm.

CAUTION : Before attempting any adjustment that requires bending of components, study the exploded view for the particular model, to determine that no parts are missing or damaged .

5.4. Tone Arm Return, Cut/Reject Control :

All models are equipped with an automatic arm return mechanism, ganged with a control button marked "CUT" or "REJECT" . These features allow minimum operator attention and permit record interruption and motor shut-off at any time. The power is shut off when the tone arm is returned to REST position .

5.5. Anti Skating :

An anti skating mechanism is included as an integral part of the tone arm base in all models. This device works on the principal of spring loading the tone arm to compensate for forces applied to the stylus by rotating disc.

Service of this mechanism is limited to replacement of parts only with factory supplied original equipment types, or to replacement of the complete tone arm assembly. Lubricant is not used in servicing the anti skating mechanism .

FOR PROPER SETTING OF THE ANTI SKATING CONTROL, REFER TO THE CARTRIDGE MANUFACTURER'S SPECIFICATIONS .

5.6. Stylus Pressure Adjustment :

For proper performance of your phono cartridge, the stylus pressure must be adjusted to the tracking force recommended by cartridge manufacturer. Proceed as follows :

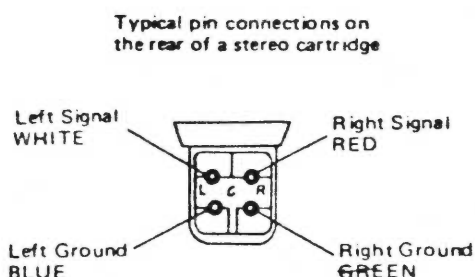
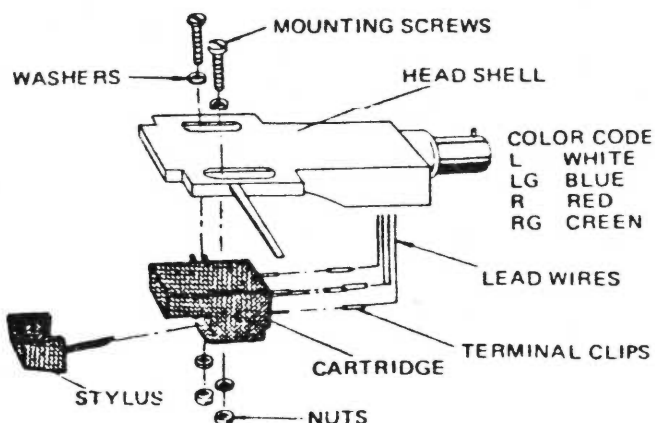
1. Unlock tone arm hook, also remove cartridge stylus cover.
2. Start motor. Ensure that the cue lever is in down position so that the arm can move freely. Set anti-skate control to "0".

NOTE : If the arm lifter is sticky in operation at the beginning, lightly push down on the arm lifter with your fingers.

3. Zero balance the arm by rotating the counter weight until the arm is laterally balanced.
4. Now adjust only the counter weight dial ring so that the dial position "0" lines up with the RED line marked on the tone arm, being careful not to rotate the counter weight.
5. Finally, rotate the counter weight until the dial indicates the manufacturer's specified stylus pressure.
6. Normally, the anti-skate adjustment is set to the same number as the stylus tracking force. The anti-skate setting for elliptical or Shibata styli should be set to the cartridge manufacturer's specification.

5.7. Cartridge Installation :

1. A cartridge is not generally supplied as part of these turntables, so that the customer has complete choice of cartridge brand and type.
2. Suitable cartridges are any standard 12.7mm/1/2" type (ceramic or preferably magnetic) with a Tracking Force of 1.5 to 3.0 gr.
3. Read instruction supplied with cartridge thoroughly before proceeding.
4. Refer to Fig. 1 (please note that mounting screws, washers and nuts are supplied with head shell for mounting the cartridge).
5. Unpack the cartridge and carefully remove stylus guard (if so equipped) and stylus. Carefully place stylus and guard in a safe location.
6. Using tweezers or long nose pliers, carefully connect wires following the color code as shown in Fig. 1.
7. Using screws, washers and nuts (supplied), loosely install cartridge to the head shell as shown in Fig. 1. (a small flat screwdriver is required). Do not fully tighten screws. Replace stylus in cartridge.
8. Install the head shell into the tone arm upside down (with stylus tip upward) and rotate lock nut clockwise until head shell is tightly installed.

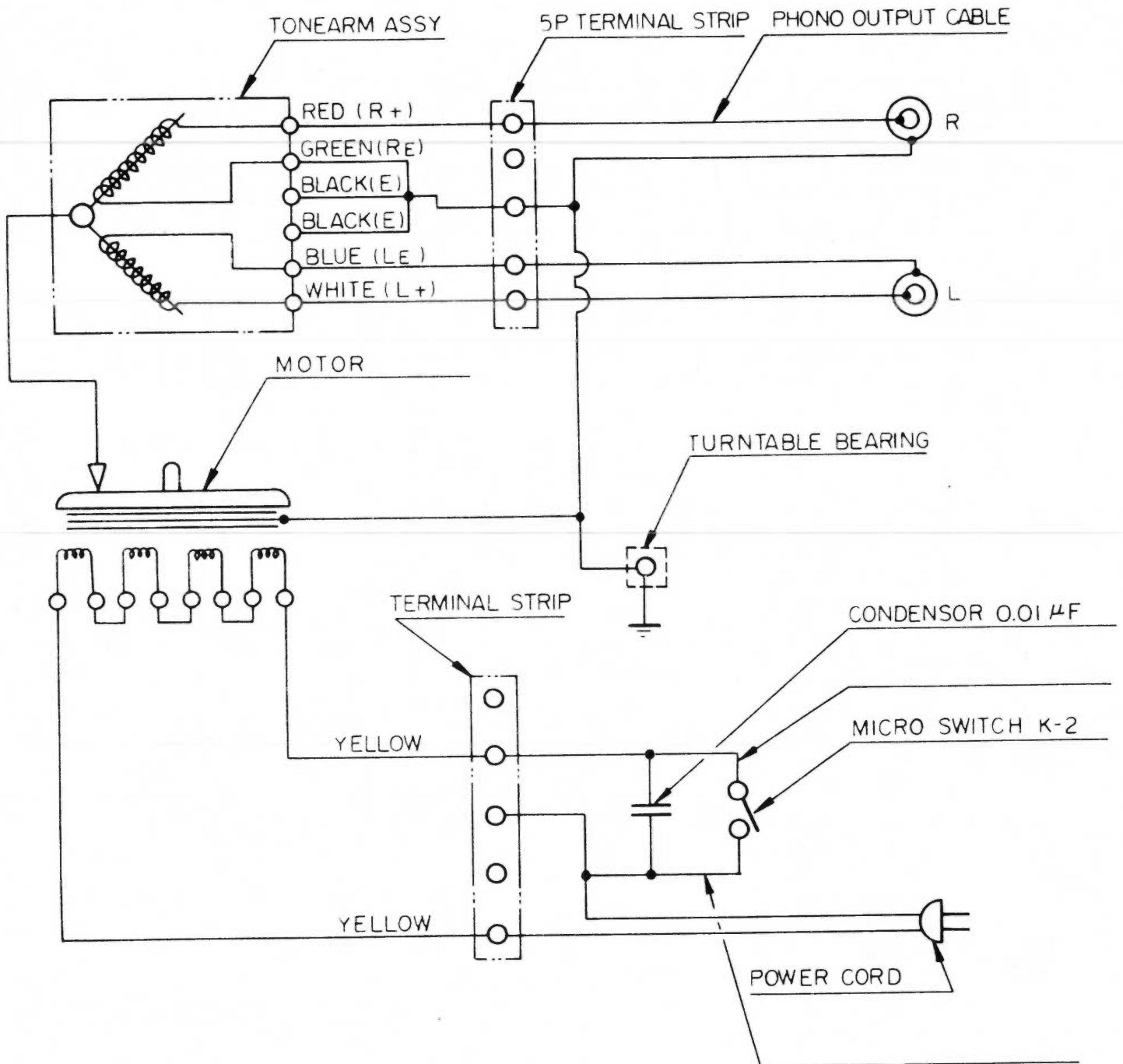


Note: Use your terminal clips in connecting lead wires to cartridge pins. Do Not use solder on cartridge pins.

Fig. 1.

9. Adjust cartridge in head shell by sliding cartridge back and forth until the stylus is positioned 52mm (2 1/16 inches) $\pm$ 1.6mm (1/16 inch) from the small rubber ring at the connecting point of head shell and tone arm. Make certain that cartridge is square in head shell.
10. Carefully remove head shell without changing cartridge position and tighten the mounting screws.
11. Re-install the head shell on the tone arm in its normal position.

PS28 WIRING DIAGRAM



CIRCUIT DESCRIPTION PS-48

POWER SUPPLY

The power supply is a transformer isolated type employing a full wave bridge rectifier. The output of which is an unregulated 12 V D C.

A neon lamp is connected across the primary, through a current limiting resistor, to serve as a strobe light using the line frequency as a reference.

MOTOR

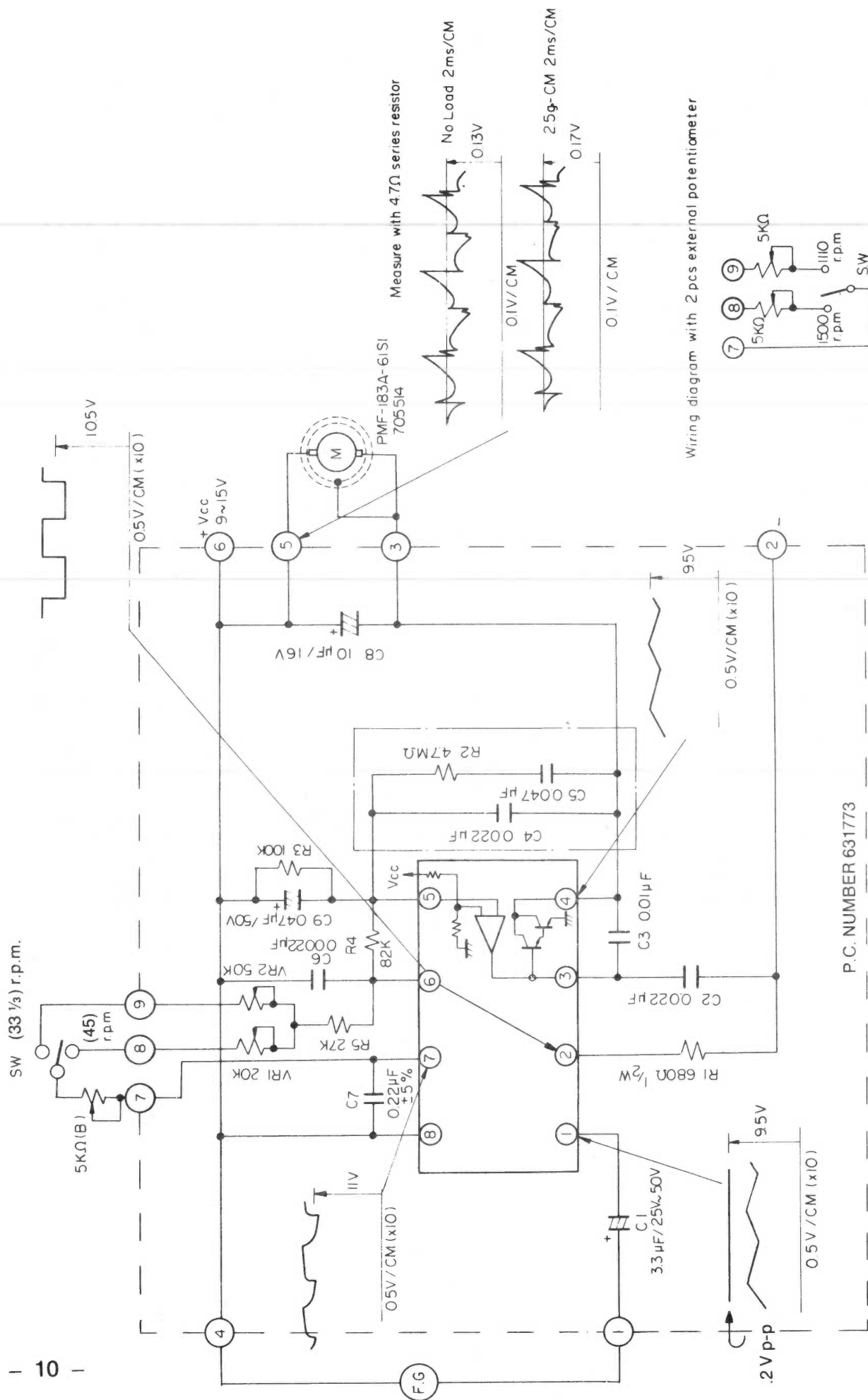
The motor is a D C servo type which is driven from the output of the integrated circuit. A feedback signal is taken from the motor and returned to the control board (pin 1) and through to pin 1 of the I C μ PC 1003 for speed regulation.

CIRCUIT OPERATION

The μ PC 1003 is designed to drive the turntable motor as well as to process a feedback signal for speed regulation.

The motor drive is between supply + 12 volts and pin 4 of the I C. Pin 4 is the collector of the drive transistor in the I C. Under normal operating conditions there is a small voltage drop between supply + 12 and pin 4 of the I C.

If drag is placed on the motor spindle (such as gripping it lightly between the fingers) the voltage at pin 4 drops slightly. Thereby, producing a greater voltage across the motor increasing the drive. This corrective action occurs because the input voltage at the comparator input goes low against the reference. Since the comparator is a non inverting type the output (which drives the motor) also goes low increasing the drive.

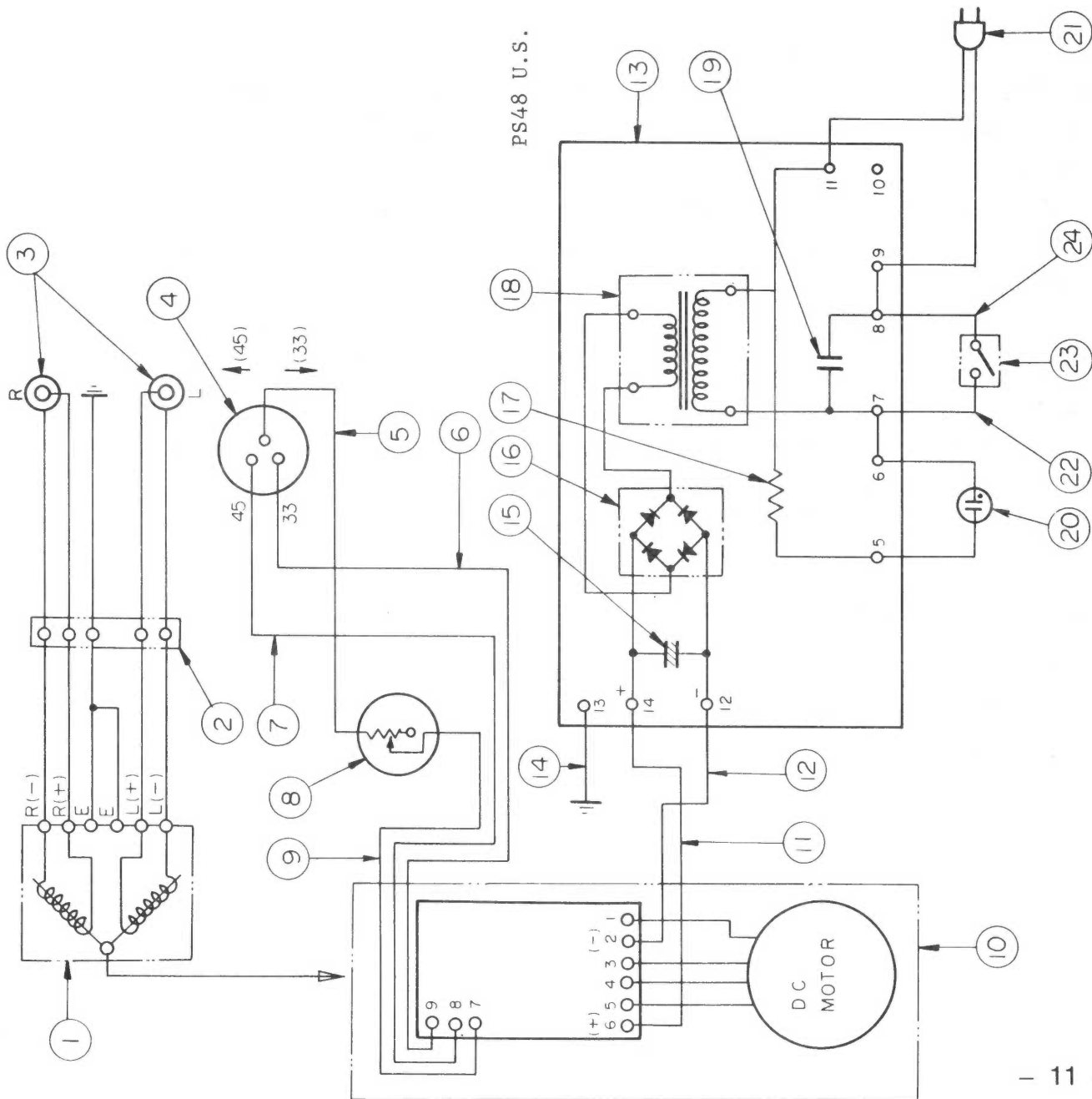


CAUTION! R4 & R5 MAYBE MARKED IN NON STANDARD
COLOR CODE ON SOME UNITS.

Item	Description	Drawing No.	Remarks
1	Tonearm ass'y	852228-1	With cartridge
2	5P terminal strip	890979	
3	Phono output cable	871474-2	
4	Push switch	872815	
5	UL cord		1007 #24 Brown
6	UL cord		1007 #24 Gray
7	UL cord		1007 #24 White
8	Potentiometer		5K ohm B
9	UL cord	703062-2	
10	Motor ass'y		1007 #24 Orange
11	UL cord		DMR-183A-61S-1
12	UL cord		1007 #24 Red
13	Power P. C. B.	872733-3	
14	Grounding wire ass'y	894788-4	
15	Electrolytic condenser	C 503	
16	Diode	D 501	
17	Resistor	R 501	
18	Power transformer	872292-1	
19	Capacitor	899299	
20	Neon Lamp	894001-1	
21	Double insulation cord		1618 #24 Blue
22	Double insulation cord		1618 #24 Blue
23	Micro switch	870270	OMRON
24	Double insulation cord		1618 #24 White
25	Power cord ass'y	895617	

Item	Description	Drawing No.	Remarks
1	Tonearm ass'y	852228	W/o cartridge
2	5P terminal strip	890979	
3	Phono output cable	871474-2	
4	Push switch	872815	
5	UL cord		1007 #24 Brown
6	UL cord		1007 #24 Gray
7	UL cord		1007 #24 White
8	Potentiometer		5 K ohm B
9	UL cord	703062-2	
10	Motor ass'y		1007 #24 Orange
11	UL cord		DMR-183A-61S-1
12	UL cord		1007 #24 Red
13	Power P. C. B.	872733-2	
14	Grounding wire ass'y	894788-4	
15	Electrolytic condenser	C 503	
16	Diode	D 501	
17	Resistor	R 501	
18	Power transformer	872290	
19	Capacitor		0.01 μ F
20	Neon lamp	894001-3	
21	Power cord ass'y	892435-1	
22	Double insulation cord		1618 #24 Blue
23	Micro switch	870270	OMRON K-2
24	Double insulation cord		1618 #24 White

PS48 U.S.



CIRCUIT DESCRIPTION PS-68

POWER SUPPLY

The power supply is a transformer isolated full wave bridge type with a fused secondary. The regulator consists of X_{102} and the pass transistor X_{103} which is located on a aluminium bracket. The voltage on the zener diode is 16V and the output should be 14.5V at pins 16 & 17. A neon lamp is connected across the primary side of the transformer through a limiting resistor and functions as a stobe source for turntable speed synchronization purposes.

DRIVE MOTOR

The PS-68 is driven by a 8 pole brushless DC direct drive motor. It is composed of a precision brass uni-bearing assembly mounted on a metal support bracket that forms part of the motor housing. Located around the bearing assembly are four coils connected in pairs so that each two on opposite sides are wired in series to form the fieldcoils assemblies "A" and "B". The Rotor assembly consists of a precision ground shaft on which a disc ceramic multipole magnet is mounted. The drive magnet resembles a typical loudspeaker field magnet. This magnet not only forms the drive element, but also functions as a position indicator. This system uses Hall effect devices and transistors $X_5 - X_{12}$ to energize the coils when the shaft (magnet) is the proper position to maintain rotation.

I C DESCRIPTION

The UPC 1043 C has specifically designed for motor speed control. It contains the amplifiers, differentiator, Schmitt trigger, and a accurate reference supply which are necessary for this purpose.

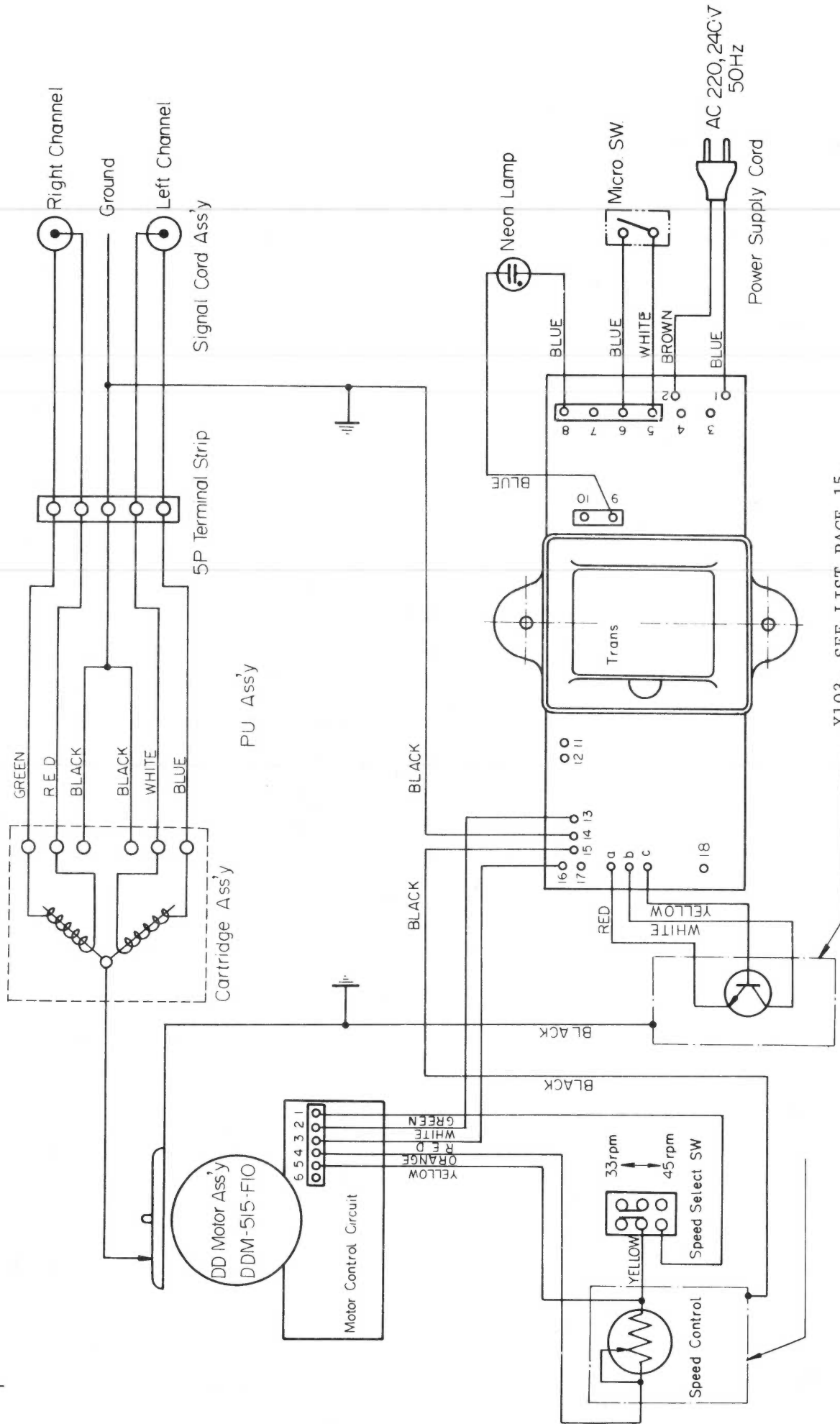
CIRCUIT OPERATION

When the power is applied to the turntable it begins to rotate; however, during the first few seconds there is no regulation. When rotation commences the pick-up coil generates an approximately sinusoidal signal which is applied to the preamplifier (pin 1 & 2 of the IC). Here it is amplified and passed from the amplifier output (pin 3) to (pin 4) the input of the Schmitt trigger which generates a square wave that is differentiated by C_5 and applied to pin 15. At the negative going edge of this waveform (I C pin 15) the sample and hold circuit is activated and compares the reference voltage with the voltage sampled from the timing RC network.

This network forms the turntable speed control and uses VR_1 , R_6 , VR_2 and R_{23} with C_8 for 33-1/3 rpm, for 45 rpm VR_2 and R_{23} are shorted creating a shorter time constant. These RC waveforms can be observed at pin 13 of the I C. Should the turntable slow down the RC decay time lengthens allowing the sampled voltage to drop. This sampled voltage is now lower than the internal reference voltage, with the DC voltage low at pin 11, the inverting DC amplifier will cause the output at pin 10 to go high, and a corrective voltage will be applied to the drive transistors X_5 - X_{12} via X_1 & X_4 . This corrective action maintains the platter rotating at a constant preset speed.

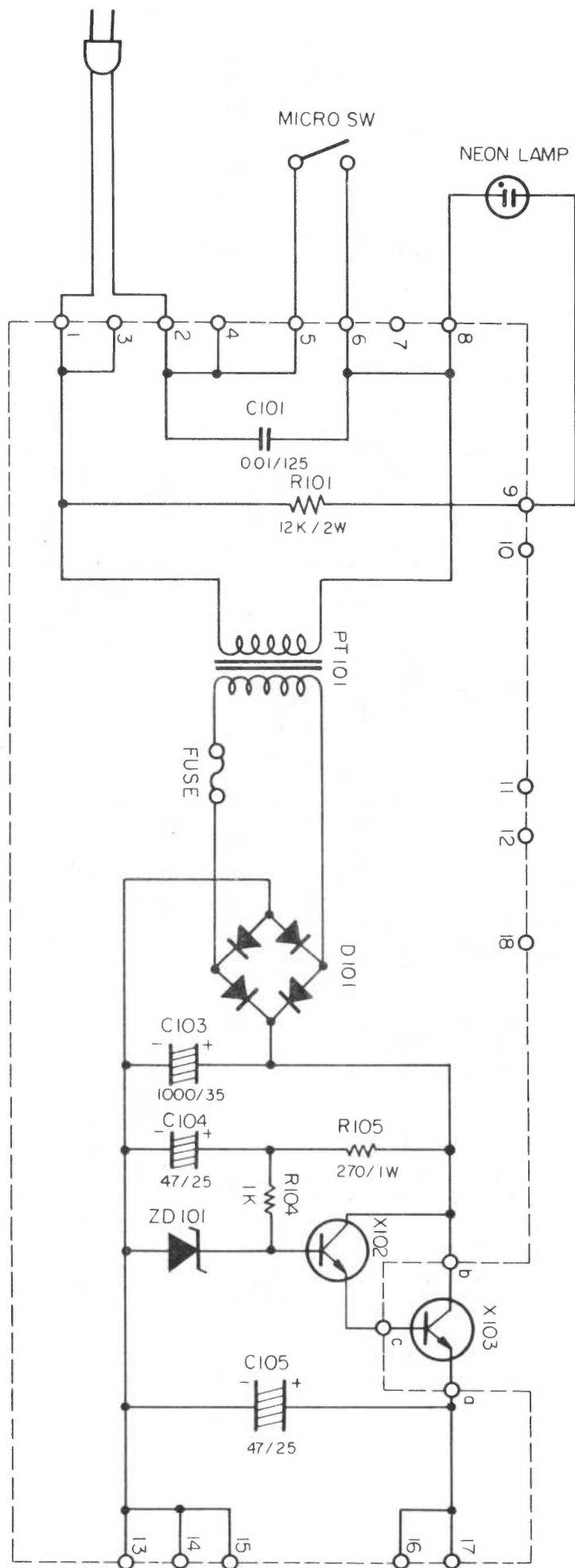
QUICK I C CHECK

With the turntable operating at 33-1/3 rpm and the platter on the spindle, observe wave forms on I C pins 10 & 13. Place your fingers against the platter edge to create enough drag to slow it down. This will cause the period waveform on I C pin 13 to lengthen and the output on pin 10 to go high. When the finger is released the waveform period will return to normal.



X103, SEE LIST PAGE 15.

PS 68(E)



FUSE	1.25 A 250 V
X 102	2 SC945
X 103	2 SC1449K L or D882 Q, P, E, or C1957 Q, P, E, or D794 Q, P, or C1162 B, C.
D 101	RB-150 or RB-151
ZD 101	RD16EB1
PT 101	FA 872730

PS68

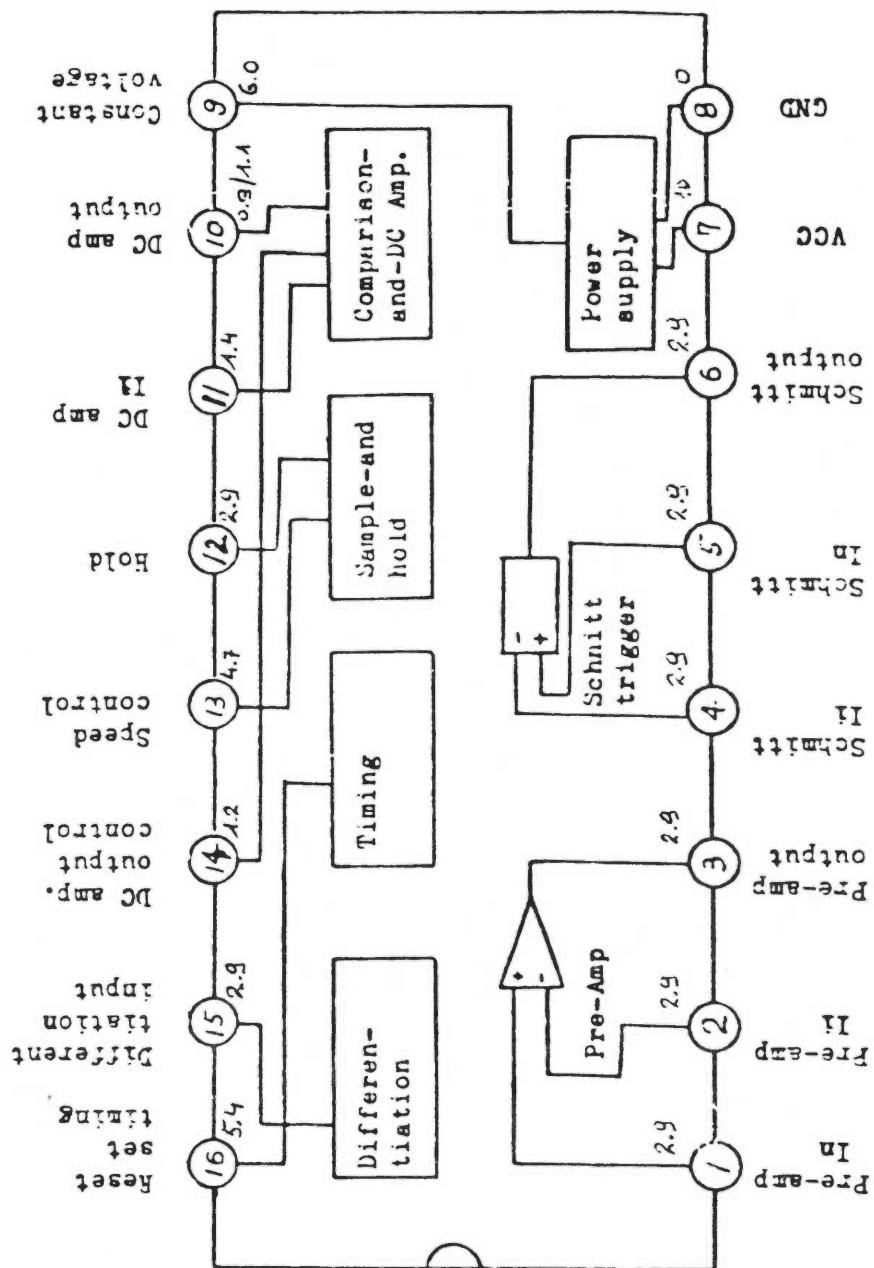
IC WAVEFORMS

SIGNAL PERIOD-----

33	I/3	RPM	22,5 mS
45		RPM	16,6 mS

WITH THE PLATTER MOUNTED
ON THE SPINDLE.

uPC1043C for PS-68



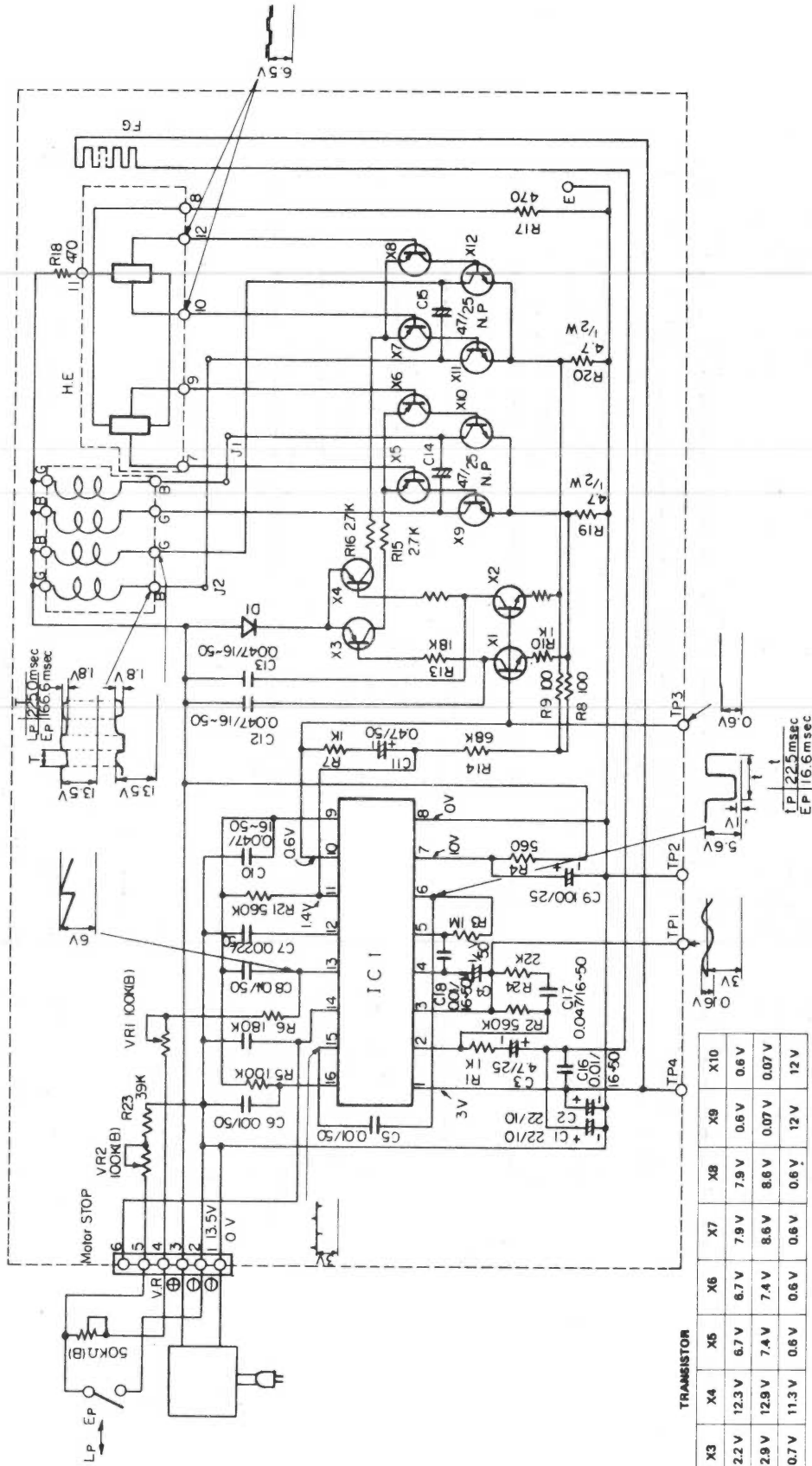
DC VOLTAGES MEASURED WITH VTTM BECAUSE LOADING EFFECTS OF VOM CHANGE CHIP OPERATION.
 NOTE: VOLTAGES REFERENCED TO GROUND, AND TAKEN AT 33 1/3 RPM.

PS68 CONTROL CIRCUIT

DOM-515F

MOTOR CONTROL BOARD

PIN NO.	IC1
1	3.0 V
2	2.9 V
3	2.9 V
4	2.9 V
5	2.9 V
6	2.4 V
7	10.0 V
8	0 V
9	5.7 V
10	0.6 V
11	1.4 V
12	2.9 V
13	2.5 V
14	1.0 V
15	3.0 V
16	5.5 V

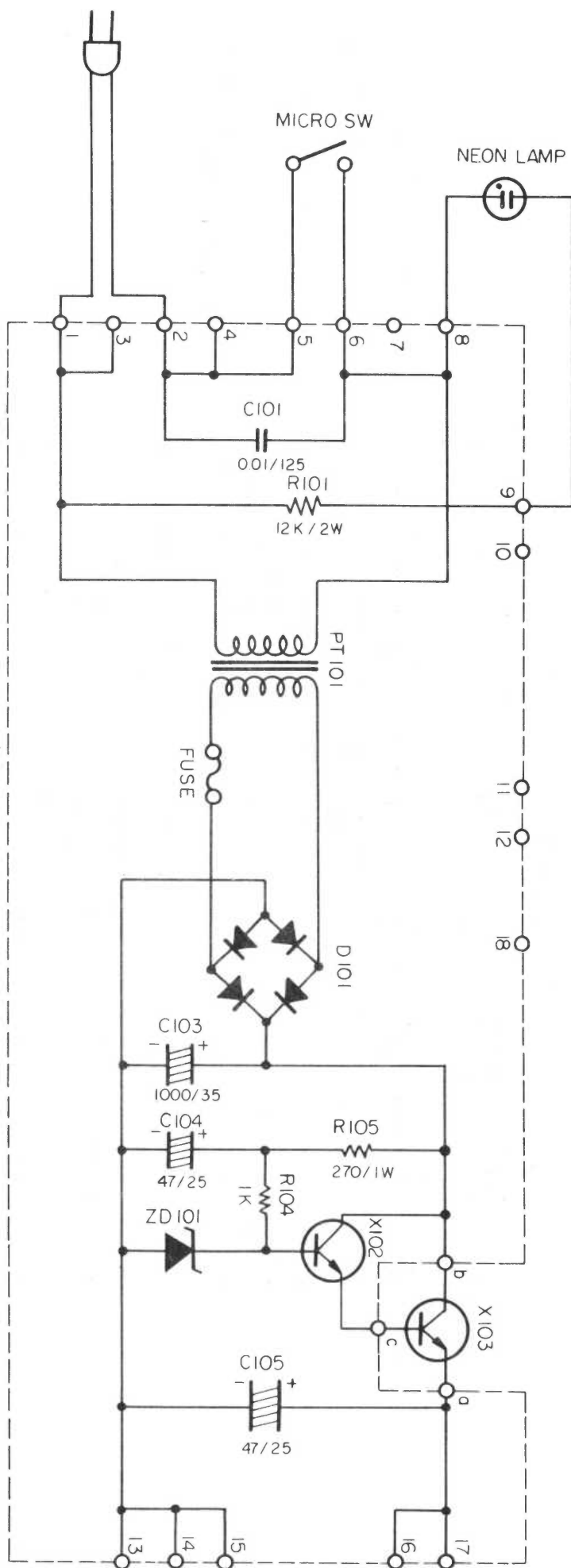


TRANSISTOR

COMPONENT	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
BASE	0.6 V	0.6 V	12.2 V	12.3 V	6.7 V	6.7 V	7.9 V	7.9 V	0.6 V	0.6 V
EMITTER	0.07 V	0.07 V	12.9 V	12.9 V	7.4 V	7.4 V	8.6 V	8.6 V	0.07 V	0.07 V
COLLECTOR	12.2 V	12.3 V	10.7 V	11.3 V	0.6 V	0.6 V	0.6 V	0.6 V	12 V	12 V

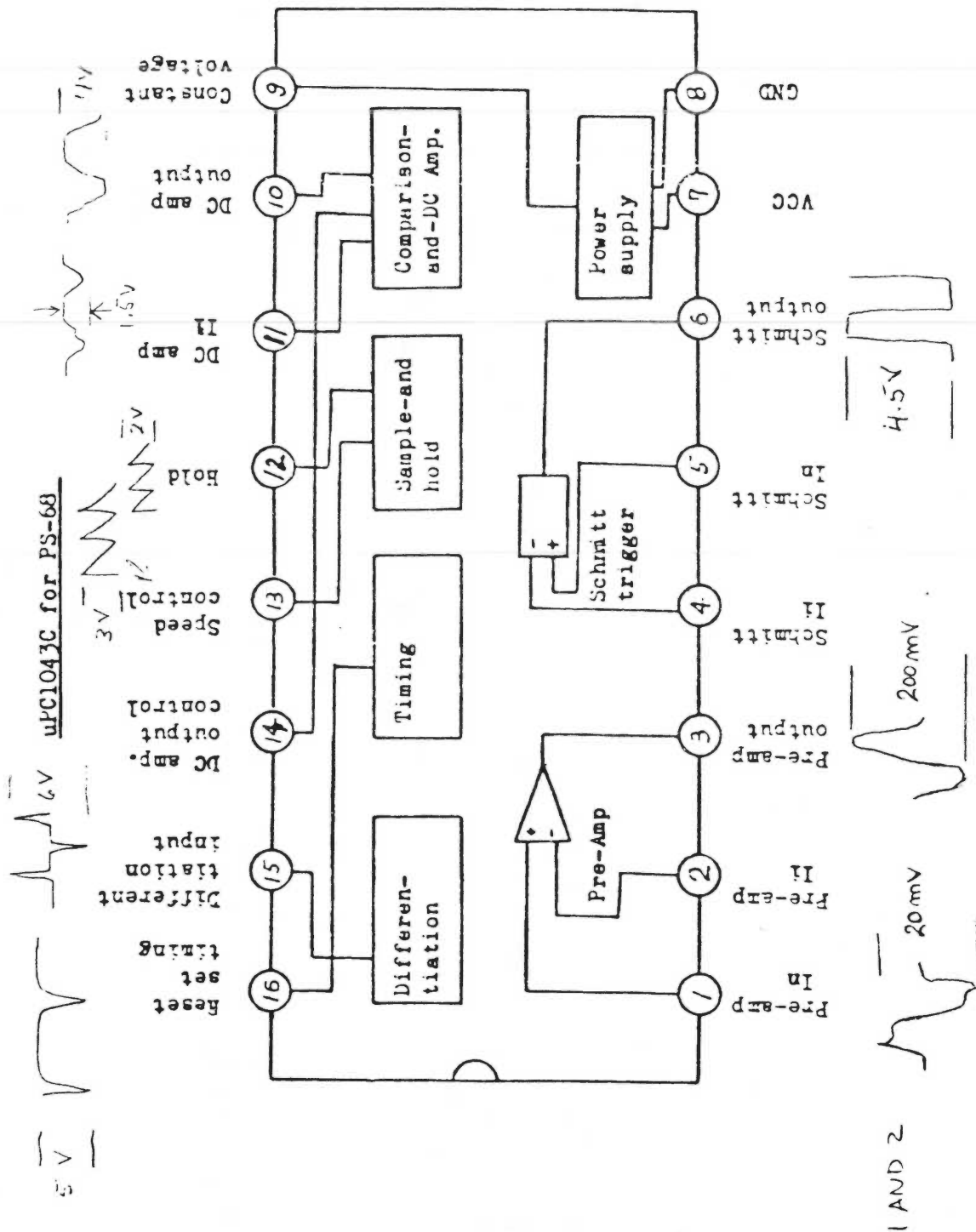
COMPONENT	X11	X12
BASE	0.6 V	0.6 V
EMITTER	0.07 V	0.07 V
COLLECTOR	12 V	12 V

PS 68(E)



FUSE	1.25 A 250 V
X 102	2 SC945
X 103	2 SC1449KL or D882 Q. P. E. or C1957 Q. P. E. or D794 Q. P. E. or C1162 B. C.
D 101	RB-150 or RB-151
ZD 101	RD16EB1
PT 101	FA 872730

PS68



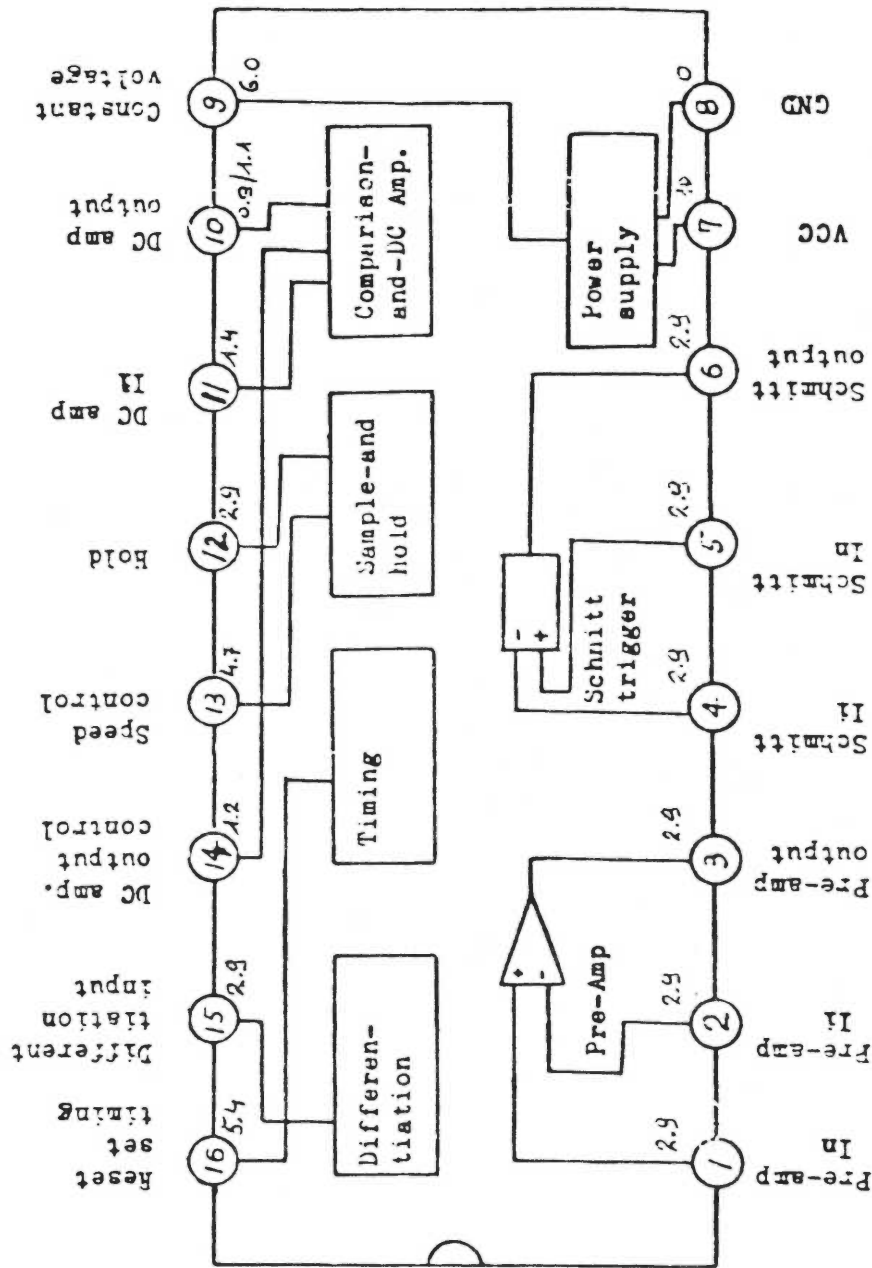
IC WAVEFORMS

SIGNAL PERIOD

33 1/3 RPM	22,5 ms
45 RPM	16,6 ms

WITH THE PLATTER MOUNTED
ON THE SPINDLE.

uPC1043C for PS-68



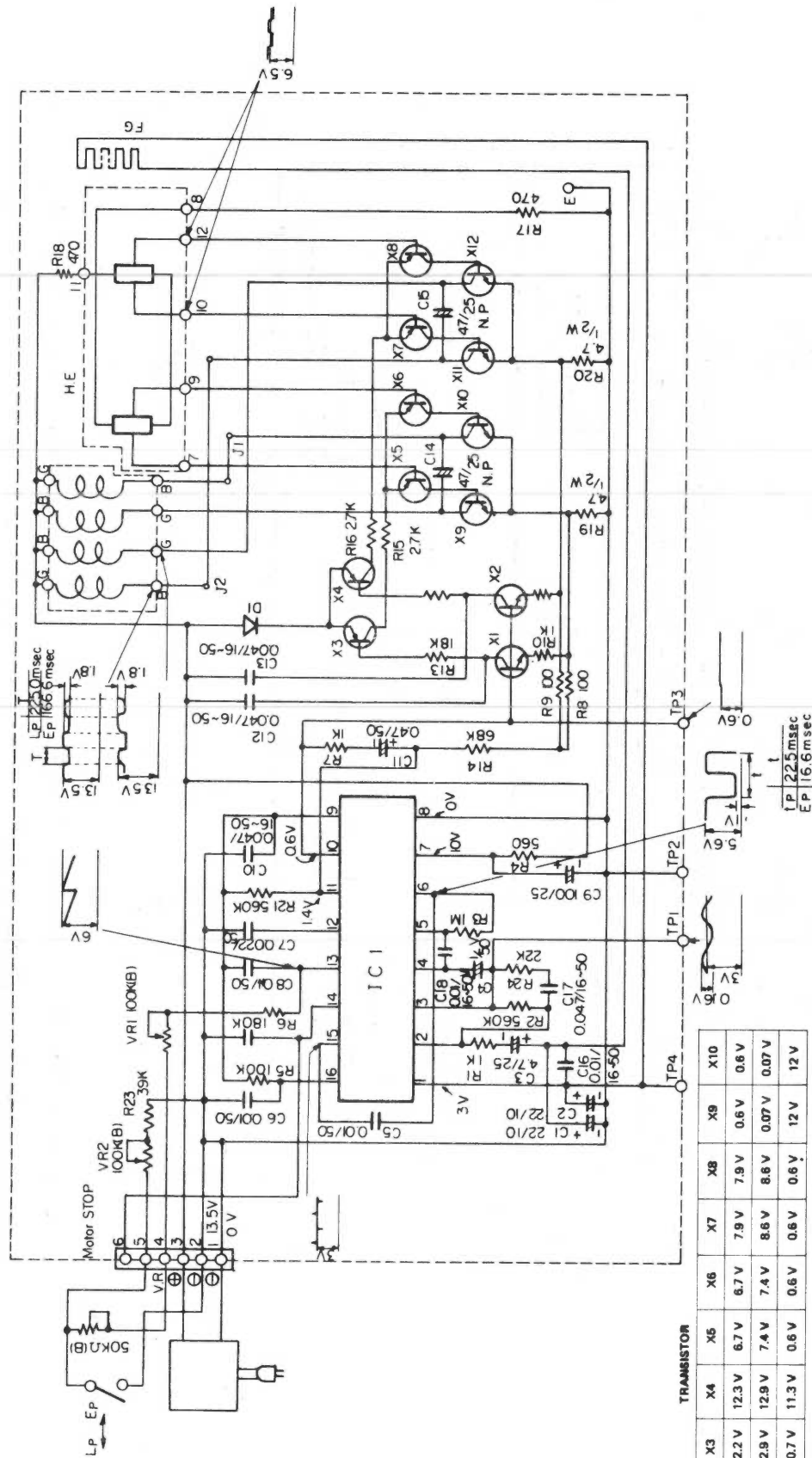
DC VOLTAGES MEASURED WITH VT_{10M} BECAUSE LOADING EFFECTS OF VOM CHANGE CHIP OPERATION.
 NOTE: VOLTAGES REFERENCED TO GROUND, AND TAKEN AT 33 1/3 RPM.

PS68 CONTROL CIRCUIT

DDM-515F

MOTOR CONTROL BOARD

PIN NO.	IC1
1	3.0 V
2	2.9 V
3	2.9 V
4	2.9 V
5	2.9 V
6	2.4 V
7	10.0 V
8	0 V
9	5.7 V
10	0.6 V
11	1.4 V
12	2.8 V
13	2.5 V
14	1.0 V
15	3.0 V
16	5.5 V



TRANSISTOR

COMPONENT	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
BASE	0.6 V	0.6 V	12.2 V	12.3 V	6.7 V	6.7 V	7.9 V	7.9 V	0.6 V	0.6 V
EMITTER	0.07 V	0.07 V	12.9 V	12.9 V	7.4 V	7.4 V	8.6 V	8.6 V	0.07 V	0.07 V
COLLECTOR	12.2 V	12.3 V	10.7 V	11.3 V	0.6 V	0.6 V	0.6 V	0.6 V	12 V	12 V

COMPONENT	X11	X12
BASE	0.6 V	0.6 V
EMITTER	0.07 V	0.07 V
COLLECTOR	12 V	12 V

CIRCUIT DESCRIPTION PS-78

POWER SUPPLY

The power supply is transformer isolated with dual fused secondaries .

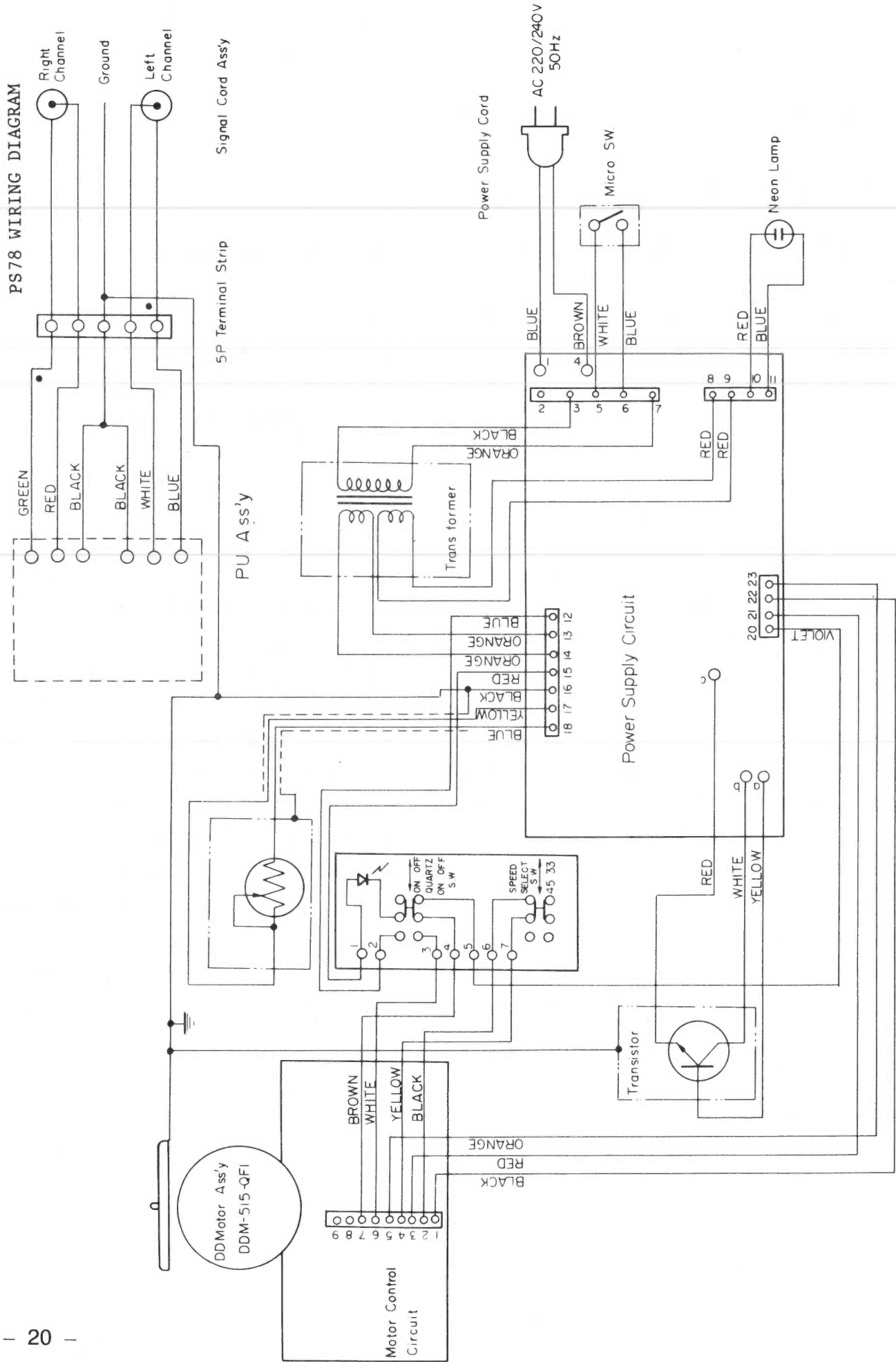
The first secondary, the rectifier bridge D101, and C104 comprise the main supply . The other supply is composed of the second secondary, D102, and C102; it supplies high voltage (160V) to operate the neon strobe lamp . The drive for the strobe comes from pin 14 of I C₂ on the control P C board . This provides 8V I C₂ . It is composed of X₁₃ and ZD₁ .

DRIVE MOTOR

The PS 78 is driven by a 4 phase 8 pole brushless DC direct drive servo motor . It is composed of a precision brass uni-bearing assembly mounted on a metal support bracket that forms part of the motor housing . Located around the bearing assembly are four coils connected in pairs so that each two on opposite sides are wired in series to form the field coils assemblies "A" and "B" . The rotor assembly consists of a precision ground shaft on which a disc ceramic multipole magnet is mounted .

The drive magnet resembles a typical loudspeaker field magnet . This magnet not only forms the drive element, but also functions as a position indicator . This system uses Hall effect devices and transistors X₁ - X₁₂ to energize the coils when the shaft (magnet) is in the proper position to maintain rotation .

PS78 WIRING DIAGRAM



OPERATIONAL QUICK CHECK OF I C₂

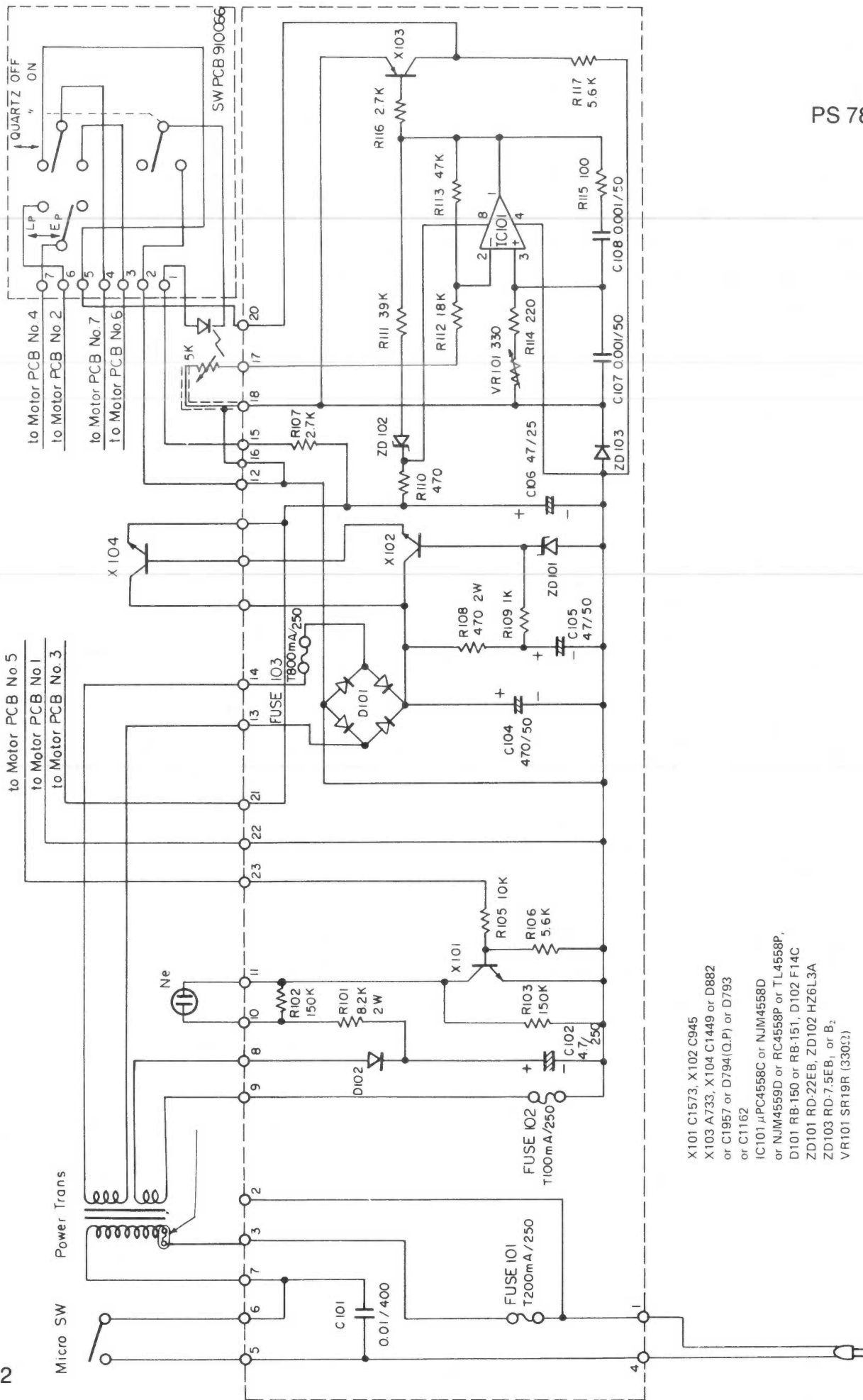
With the turntable operating at normal speed and the platter on the spindle, place your finger against the platter edge to create enough drag to slow it down . Using an oscilloscope observe the waveform at pin 7 of I C₂ . Note that the width of the waveform increases as the turntable speed decreases . The output of I C₂ pin 1 now will go high for longer periods . If the turntable speed decreases . The output of I C₂ pin 1 now will go high for longer periods . If the turntable is now stopped pin 1 of I C₁ will remain high .

SPEED ADJUSTMENT FOR ELECTRONIC TURNTABLE

Adjustment of the coarse speed control potentiometers on the printed circuit boards should not be attempted until correct circuit operation is first verified . If there is a need for adjustment on one or both speeds it should be done with the fine vernier set at the center of rotation and a record on the turntable . After adjustment, check to see that there is ample latitude of the vernier adjustment + and - for both speeds .

LUBRICATION

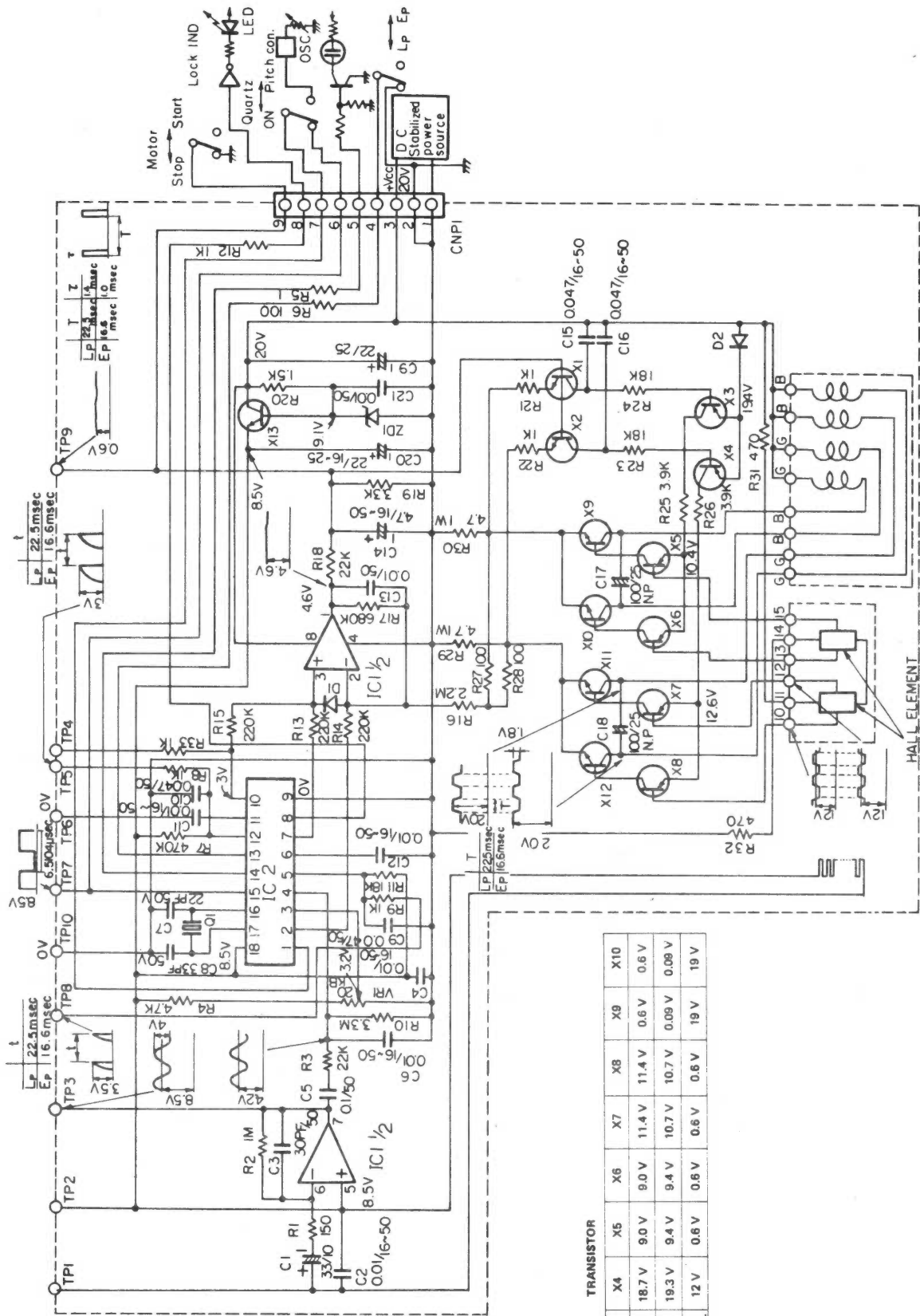
Under normal operating conditions there is no need to lubricate any moving part of these turntables; with the exception of replacing a component which should normally have lubrication on it .



PS 78(E)

- X101 C1573, X102 C945
 X103 A733, X104 C1449 or D882
 or C1957 or D794(Q.P) or D793
 or C1162
 IC101 μ PC4558C or NJM4558D
 or NJM4559D or RC4558P or TL4558P,
 D101 RB-150 or RB-151, D102 F14C
 ZD101 RD-22EB, ZD102 HZ6L3A
 ZD103 RD-7.5EB₁ or B₂
 VR101 SR19R (330 Ω)

PS78 CIRCUIT DIAGRAM



MOTOR CONTROL		
PIN NO.	IC1	IC2
1	4.4 V	3.9 V
2	2.9 V	2.4 V
3	2.9 V	3.3 V
4	0 V	3.0 V
5	8.5 V	0 V
6	8.5 V	4.2 V
7	8.5 V	3.8 V
8	20.0 V	7.7 V
9		0.1 V
10		1.9 V
10		2.8 V
11		0.1 V
12		LP 0 V
13		EP 8.5 V
14		0.06 V
15		3.3 V
16		3.0 V
17		3.4 V
18		7.7 V

TRANSISTOR										
COMPONENT	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
BASE	0.6 V	0.6 V	18.7 V	18.7 V	9.0 V	9.0 V	11.4 V	11.4 V	0.6 V	0.6 V
EMITTER	0.09 V	0.09 V	19.3 V	19.3 V	9.4 V	9.4 V	10.7 V	10.7 V	0.09 V	0.08 V
COLLECTOR	18.7 V	18.7 V	10 V	12 V	0.6 V	0.6 V	0.6 V	0.6 V	19 V	19 V

COMPONENT	X11	X12
BASE	0.6 V	0.6 V
EMITTER	0.09 V	0.09 V
COLLECTOR	19 V	19 V

I C DESCRIPTION

The I C, an MSM 5819, is specifically designed for motor speed control .

It is a phase lock loop LSI integrated circuit and consists of the necessary digital circuits to divide down from a crystal reference oscillator and compare the signal fed back from the rotating motor . Any motor variations will cause a corrective signal to be fed to the motor coils thus, maintaining constant motor speed .

CIRCUIT OPERATION

The frequency of rotation is referenced to a crystal oscillator (freq.= 4.9152MH_2) which is divided by 32 to provide the clock period of $6.5104\text{ }\mu\text{s}$ at pin 15 of I C₂ . In the lock mode this pulse is fed back into the I C via pin 1 and used as the reference . It is further divided by 256, and by 20 or 27 to produce a period equivalent to a turntable speed of 33-1/3 or 45 rpm . In the non lock mode and oscillator on the power supply board (I C 101) is used as the reference . It's period is a nominal $6.5\text{ }\mu\text{s}$; however it is variable from 6-7 μs , via the speed control knob on the chassis . Thus by changing the reference frequency the rotational speed of the turntable may be varied . Regardless of which frequency reference is used (variable or crystal) the remainder of I C₂ functions in the same manner . The circuit constantly compares the voltage derived from the turntable feedback sensor to the reference . This is done by amplifying this signal in I C_{1A} and feeding it to the sample and hold circuit in I C₂ via pin 4 . Here it is compared to the voltage derived from the reference in the P/D RC network . Should the turntable speed vary, the relationship between these signals changes and a corrective voltage is applied to the drive transistors x₁ and X₂ via I C_{1B} to return the rotation of the turntable to the proper speed .

TROUBLESHOOTING GUIDE

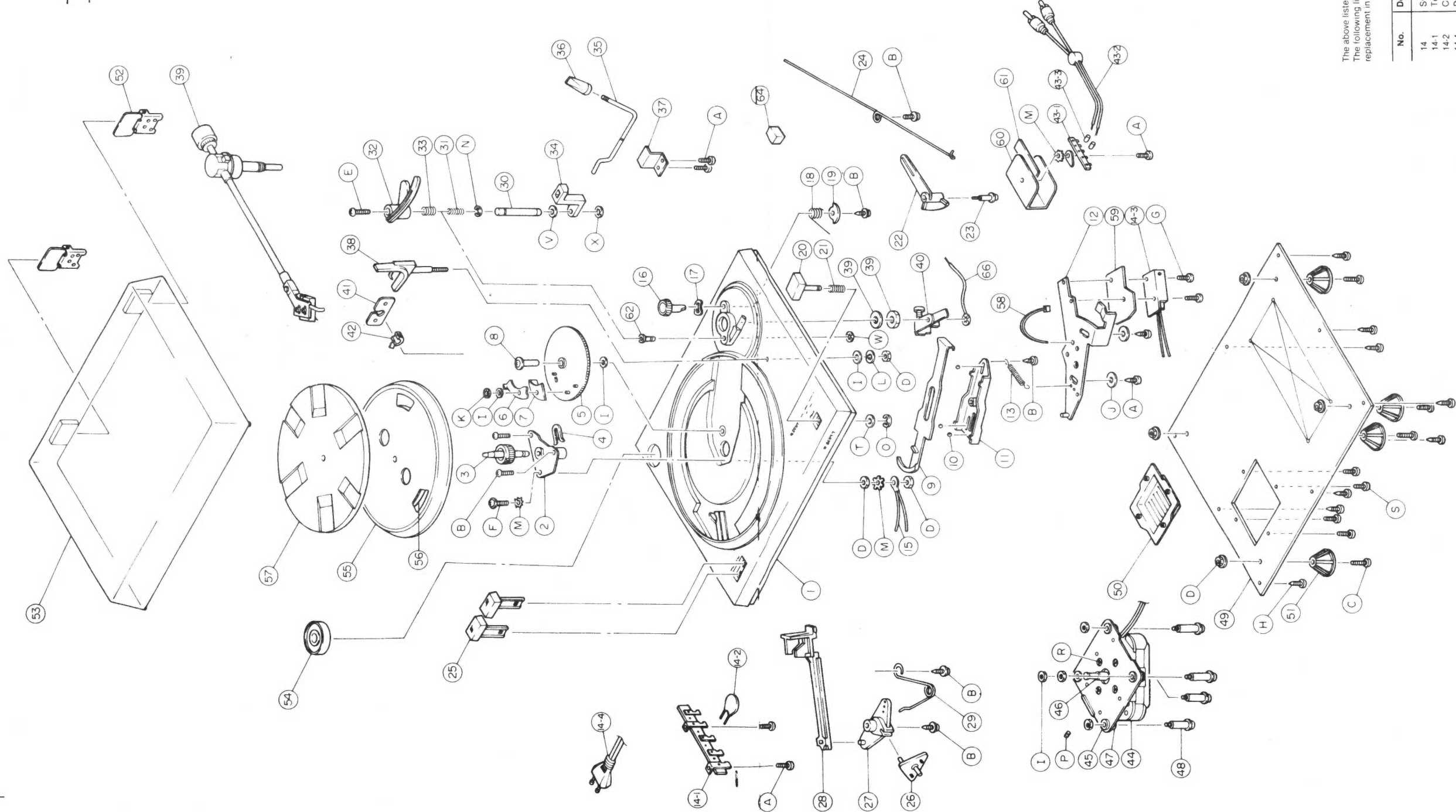
FAULT	CAUSE	CORRECTION
Turntable Speed a) Will not start: Nos. 1,2,3,4,6,8, 9 and 10 b) Turns slow : Nos. 2,4,5,7,8, 11 and 13. c) Turns fast : Nos.8,11 and 13. d) Speed changes without apparent cause: Nos.2,4,5,8,12 and 13.	1) No voltage to turntable	Check power supply outlet . Check power cord and power fuse in electronic controlled models .
	2) Motor bearings binding or frozen.	Check assembly for mechanical damage.Repair, lubricate or replace as indicated .
	3) Fuse open in electronic models .	Replace fuse, repair electronics as required.
	4) Drive belt defective or missing.	Determine cause of defect and correct. , Replace belt .
	5) Oil on belt .	Determine cause of oil,correct and replace belt .
	6) Motor winding open .	Winding resistance of DC motors,approx.15ohms With rotor stalled.AC motors measure 400ohms between black and white leads;640 ohms between black and red leads.Replace motor as required .
	7) Motor frequency generator winding open .	Winding resistance of DC motor frequency generator winding is 80 ohms (PS-48) Winding resistance of AC motor frequency generator winding is 400 ohms
	8) Circuit defect in electronic control models .	Troubleshoot and repair.Refer to circuit description .
	9) Defective switch.	Replace switch .
	10) Wrong supply voltage .	Check input supply rating on turntable . Correct supply voltage condition .
	11) Speed control "trim pots" improperly adjusted .	Check power supply line frequency.Set speed control knobs to center of range.Set turntable into operation. Adjust trim pots VR1 (33 1/3)and VR2 (45)so that proper marks on turntable appear to stand still.Switch 33/45 lever to the appropriate position .
	12) Two or more records on turntable,one record warped.	Remove warped record.
	13) Belt improperly positioned on motor pulley. (PS-28)	Adjust speed control lever.

TROUBLESHOOTING GUIDE

FAULT	CAUSE	CORRECTION
Pickup Height a) Arm does not lift off record on return cycle: Nos. 1,2, and 3. b) Arm lifter (cueing control) does not lift arm: Nos. 1,2, and 3. c) Insufficient or excessive lift: Nos. 1,2 and 3. Pickup Lowering Position	1) Worn or damaged cams or levers . 2) Bent or damaged components . 3) Improper lift adjustment.	Inspect for worn or damaged parts. Replace and lubricate as required . Repair or replace. Inspect for damaged or missing parts. Repair, replace and relubricate as necessary.
Tone Arm Return Cut/Reject Control a) Arm will not return to REST position at end of record. b) Arm returns to REST before end of record.	Arm lowering mechanism damaged or binding .	Inspect to determine cause of damage, replace parts as required. Relubricate. CAUSE AND CORRECTION OF FAILURE OF THIS MODE ARE IDENTICAL TO THOSE FOR PICKUP LOWERING POSITION

PARTS LIST FOR PS-28 (SEMKO)

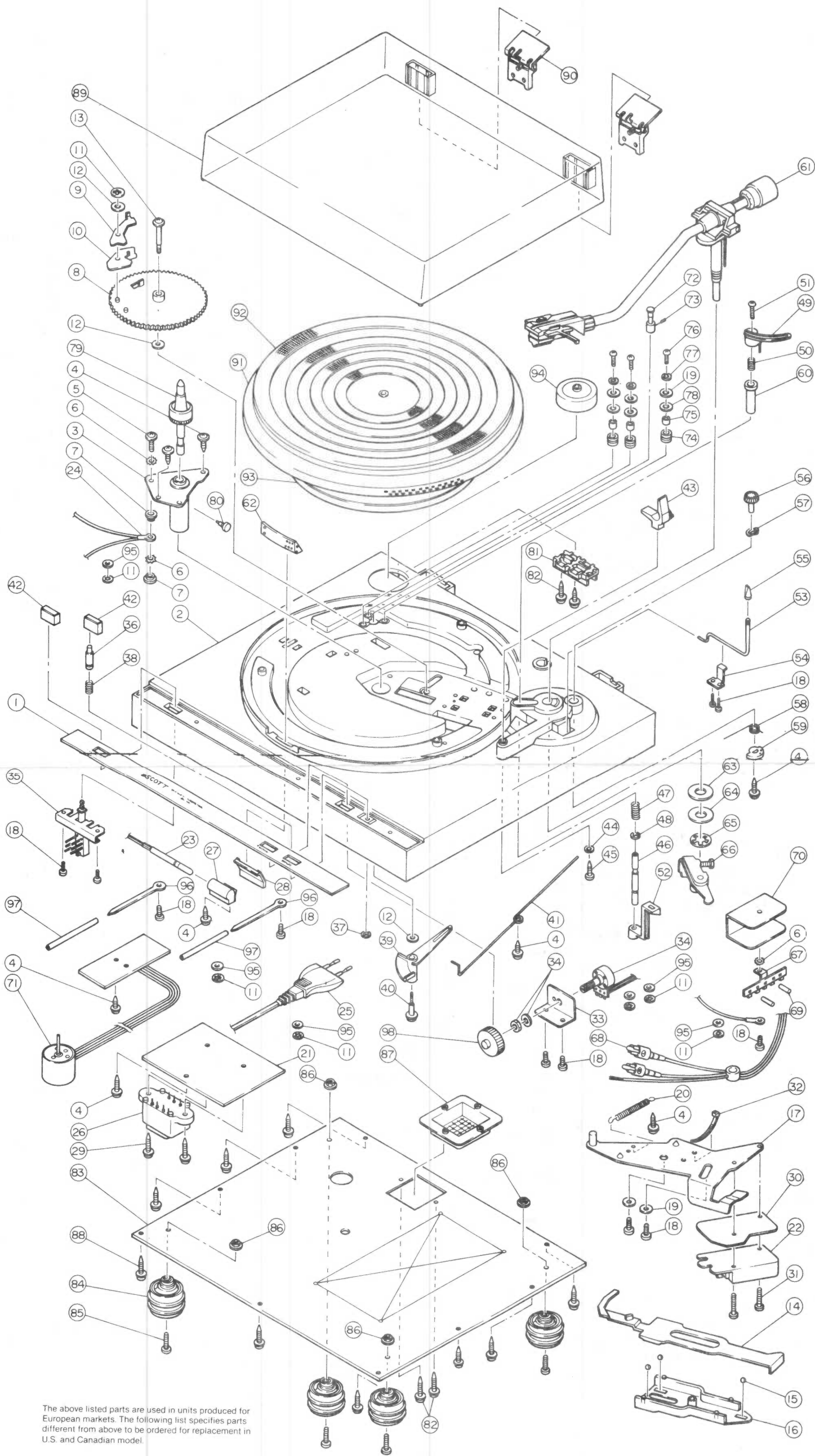
Item No.	Description	Drawing No.	Q'ty
1	Plastic base	852260-1	1
2	Turntable bearing ass'y	700514-1	1
3	Turntable spindle ass'y	701205	1
4	Stopper	E-271110	1
5	R gear ass'y (1)	895248	1
6	Clutch plate	894901	1
7	Clutch guide	894902	1
8	Fixing screw	899724	1
9	Actuating arm	870933-1	1
10	Steel ball	870932-1	3
11	Actuating base	896487	1
12	Control plate ass'y	899398	1
13	Spring	872795	1
14	Switch ass'y	884228	1
14.1	Terminal strip	899299	1
14.2	Spark killing condensor	870270	1
14.3	Micro switch	895617	1
14.4	AC cord	899726-3	1
15	Grounding wire ass'y	896627	1
16	Anti skate knob ass'y	897554	1
17	Wave washer	898637	1
18	Anti skate spring	897547	1
19	Anti skate cam	898632-3	1
20	Reject button ass'y	892084	1
21	Reject button spring	897818	1
22	Reject lever	896758-3	1
23	Special screw	897846	1
24	Reject spring	898633-3	2
25	Speed change button	898634	1
26	Speed change arm	898635	1
27	Speed change cam	898636	1
28	Belt guide	898807	1
29	Click spring	895671-9	1
30	Elevation spindle	E-832780	1
31	Elevation spring	896444	1
32	Elevation plate	895021-4	1
33	Spring	899924	1
34	Cueing arm	895677-2	1
35	Cueing lever	893914	1
36	Cueing lever cap	897247	1
37	Lever retaining plate	898806	1
38	Tonearm rest ass'y	851963-5	1
39	Tonearm ass'y	893583-3	1
40	Feed arm ass'y	893037-3	1
41	Power cord retaining plate	891568-3	1
42	SR bushing	896531-1	1
43	5P terminal strip ass'y	890979	1
43.1	5P terminal strip	890496-1	1
43.2	Phono output cable ass'y		
43.3	Varnished tube		
44	Motor, IM-S275-12C-15		1
45	Motor mounting plate	896147	1
46	Motor pulley	703740-2	1
47	Rubber cushion	702230	1
48	Motor mounting screw	893057-1	4
49	Bottom cover	872323	1
50	Motor cover	896447	1
51	Foot	892227	4
52	Auto hinge ass'y	898532	2
53	Dust Cover	851888-4	1
54	45 rpm adaptor	890876	1
55	Turntable platter	620063	1
56	Drive belt	700515-B	1
57	Rubber mat	851705	1
58	Wire fastener	894408	1
59	Insulation sheet	893327	1
60	Screen plate	890959-1	1
61	UL Tape		
62	Elevation cylinder	899710-1	1
63	Foamed plastic		
64	Grounding wire ass'y	890432-4	2
66		898801	1
A	Screw, BT 3 x 8		7
B	Screw, TPT 3 x 8		5
C	Screw, FM 3 x 14		4
D	Lock nut, FLN-3		7
E	Screw, FM 3 x 14		1
F	Screw, TP 3 x 14		2
G	Screw, FM 2.6 x 15		1
H	Screw, FMT 4 x 16		8
I	Washer, FW 3.2 x 8 x 0.5t		8
J	Washer, FW 3.2 x 13 x 0.8t		2
K	CS stopper, CS-3		1
L	Star washer, TOW-3		1
M	E washer, E-3		3
N	E washer, E-3.2		1
O	Set screw, T 2.6 x 2		1
P			
Q	Screw, TP 3 x 6		1
R	Screw, FMT 3 x 12		4
S	Nylon washer, NW 4.2 x 8 x 0.5t		1
T			
U	Nylon washer, 4 x 8 x 1t		1
V	CS stopper, CS-6		1
W			
X	CS stopper, CS-4		1



The above listed parts are used in units produced for European markets.
The following list specifies parts different from above to be ordered for
replacement in U.S. and Canadian model.

No.	Description	Part No.
14	Switch ass'y	872831
14-1	Terminal strip	891649-1
14-2	Condenser	899781
14-4	Pwr cord	892435-1
39	Tone arm ass'y	851963-6
41	Pwr cord retainer	892624-3
42	SR bushing	891568-0
43	5P term ass'y	896643-1
43-2	Phone output cable	871474
44	Motor	1M-S275-12BUC-11
65	Ground wire	899726-3

All other parts are common to both series.

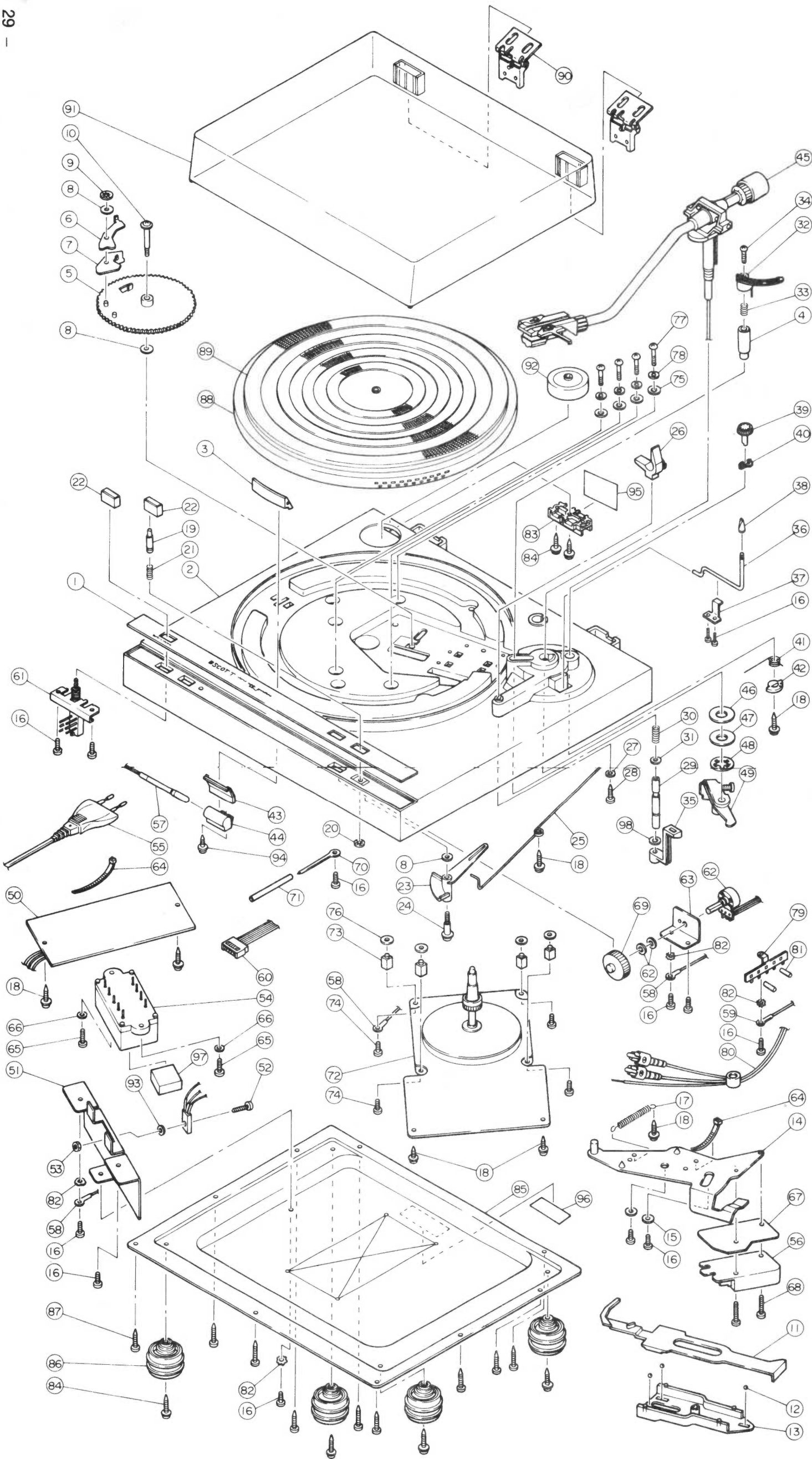


Item	Description	Drawing No.	Q'ty
1	Al. Panel	852222	1
2	Plastic base	847969	1
3	TT bearing ass'y(2)	895092	1
4	TPT + 3 x 8		8
5	TP + 3 x 14		1
6	TOW-3		3
7	Flange nut N-3		2
8	R gear ass'y(1)	895248	1
9	Clutch plate	894901	1
10	Clutch guide	894902	1
11	CS-3		7
12	FW 3.2 x 8 x 0.5t		3
13	Fixing screw	899724	1
14	Actuating arm	870933-1	1
15	4" steel ball		3
16	Actuating base	870932	1
17	Control plate ass'y	896487	5
18	BT + 3 x 8		11
19	FW 3.2 x 13 x 0.8t		5
20	Spring	899398	1
21	Power P. C. B.	872733-3	1
22	Micro switch	870270	1
23	Neon lamp	894001-1	1
24	Grounding wire ass'y	894788-4	1
25	Power cord ass'y	895617	1
26	Power transformer	872294	1
27	Lamp holder	897657	1
28	Lamp cover(2)	897855	1
29	TPT + 3 x 16		2
30	Insulation sheet	893327	1
31	M + 2.6 x 15		2
32	Wire fastener	894408	1
33	Pot. bracket	898325	1
34	Potentiometer	703062-2	1
35	Push switch	872815	1
36	Reject spindle	897843	1
37	E-3.2		1
38	Button spring	892084	1
39	Reject lever	897818	1
40	Fixing screw	896758-3	1
41	Reject spring	898527	1
42	Button	899837-1	1
43	Tonearm rest ass'y	897883-1	1
44	S. SW-3		1
45	FMT + 3 x 25		1
46	Elevation spindle	899923	1
47	Elevation spring	E-832780	1
48	E-3		1
49	Elevation plate	896444	1
50	Spring	895021-4	1
51	FM + 3 x 14		1
52	Cueing arm	899924	1
53	Cueing lever	895677-2	1
54	Holding plate	897247	1
55	Cueing lever cap	893914	1
56	I.F.C. knob ass'y	896627-1	1
57	Wave washer	897554	1
58	I. F. C. spring	898637-2	1
59	I. F. C. cam	897547	1
60	Elevation cylinder	910243	1
61	Tonearm ass'y	852228-1	1
62	Strobe window	910242	1
63	FW 10 x 22 x 0.6t		1
64	Rubber washer	899399	3
65	CS-10		1
66	Feed arm ass'y(2)	893583-3	1
67	5P terminal strip	890979	1
68	Phono output cable	871474-2	1
69	Varnished tube		2
70	Screen plate	890959-1	1
71	Motor, DMR-183A-61S-1		1
72	Motor pulley	894021	1
73	T - 2 x 3		1
74	Rubber cushion	242020	3
75	Pipe	234971	3
76	FM + 2.6 x 12		3
77	S. SW-2.6		3
78	Fiber washer 4.7 x 13 x 1t		3
79	TT. spindle ass'y(2)	895047	1
80	Stopper pin	894271	1
81	Cord holder	898550-1	1
82	TPT + 3 x 12		4
83	Bottom board	872766	1
84	Rubber foot	897960-5	4
85	FM + 4 x 12		4
86	Flange nut N-4		4
87	Transformer cover	898530	1
88	TPT + 4 x 12		9
89	Dust cover	851888-4	1
90	Auto hinge ass'y	898532	2
91	Turntable platter	620053-4	1
92	Rubber mat	871222-1	1
93	Drive belt	700515-B	1
94	45 rpm adaptor	890876	1
95	Fiber washer 3 x 10 x 0.5t		6
96	Lug	890755	2
97	UL tube		2
98	Pitch con. knob	899838-1	1

The above listed parts are used in units produced for European markets. The following list specifies parts different from above to be ordered for replacement in U.S. and Canadian model.

Item	Description	Part No.
16	Actuating base	870932-1
21	Power PCB	872733-2
23	Neon lamp	894001
25	Power cord	892435-1
26	Pwr. trans.	872290
53	Quing lever	895627-2
61	Tone arm assy	852228
91	Turntable platter	620053
92	Rubber mat	871222

All other parts are common to both series.

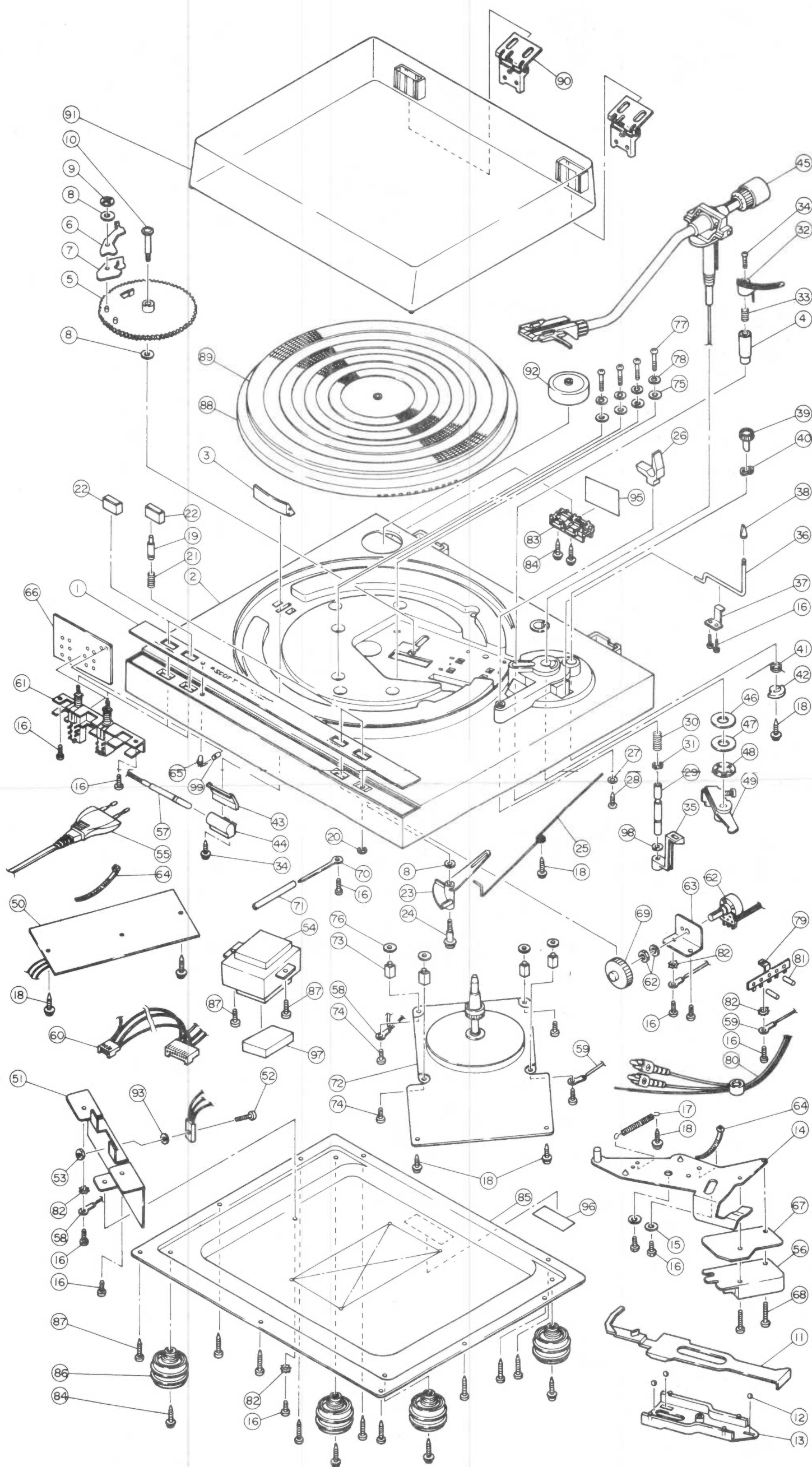


No.	Description	Drawing No.	Q'ty
1	Al. panel	852222-1	1
2	Plastic base	848066	1
3	Strobe window	910242	1
4	Elevation cylinder	910243	1
5	R gear ass'y	895248	1
6	Clutch plate	894901	1
7	Clutch guide	894902	1
8	FW 3.2 x 8 x 0.5t		3
9	CS stopper	CS-3	1
10	R gear screw	899724	1
11	Actuating arm	870933-1	1
12	Steel ball		3
13	Actuating base	870932-1	1
14	Control plate assy	896487	1
15	FW 3.2 x 13 x 0.8t		2
16	BT 3 x 8		14
17	Spring	899398	1
18	TPT 3 x 8		7
19	Reject spindle	897843	1
20	E-3.2		1
21	Button spring	892084-1	1
22	Push button	899837-1	2
23	Reject lever	897818	1
24	Special screw	896758-3	1
25	Reject spring	898527	1
26	Tonearm rest assy	897883-1	1
27	S.S.W-3		1
28	FMT 3 x 25		1
29	Elevation spindle	899923	1
30	Elevation spring	E-832780	1
31	E-3		1
32	Elevation plate	896444	1
33	Spring	895021-4	1
34	FM 3 x 14		1
35	Cueing arm	899924	1
36	Cueing lever	895677-2	1
37	Holding plate	897247	1
38	Cueing lever cap	893914	1
39	I. F. C. Knob assy	896627-1	1
40	Wave washer	897554	1
41	I. F. C. spring	898637-2	1
42	I. F. C. cam	897547	1
43	Lamp cover(2)	897855	1
44	Lamp holder	897657	1
45	Tonearm assy	852228-1	1
46	FW 10 x 22 x 0.6t		1
47	Rubber washer	899399	3
48	CS-10		1
49	Feed arm assy(2)	893583-3	1
50	Power P. C. B.	872747-1	1
51	Heat sink	910219	1
52	FM 3 x 10		1
53	FLN 3		1
54	Transformer	872729	1
55	Power supply cord	895617	1
56	Micro switch	870270	1
57	Neon lamp	894001-1	1
58	Grounding wire	893442-2	1
59	Grounding wire	899482-4	1
60	Connector assy	910250	1
61	Push switch	872815	1
62	Potentiometer	703062-3	1
63	Pot. bracket	898325	1
64	Wire fastener	894408	5
65	BT 3 x 16		2
66	FW 3.2 x 8 x 1.0t		2
67	Insulation sheet	893327	1
68	M 2.6 x 15		2
69	Pitch knob	899838-1	1
70	Lug	890755	4
71	UL tube		4
72	Motor	DDM-515F-10	1
73	Pillar	910168	4
74	FM 4 x 10		4
75	FW 4.2 x 12 x 1.0t		4
76	FW 4.5 x 10 x 1.0t		4
77	FM 4 x 16		4
78	S. SW 4		4
79	5P terminal strip	890979	1
80	Phono output cable	871474-2	1
81	Varnished tube		2
82	TOW 3		4
83	Cord holder	898550-1	1
84	TPT 3 x 12		6
85	Bottom cover	872839-1	1
86	Rubber foot	897960-5	4
87	FMT 4 x 10		9
88	Turntable platter	620082-1	1
89	Rubber mat	871222-1	1
90	Auto hinge	898532	2
91	Dust cover	851888-4	1
92	45 rpm adaptor	890876	1
93	Insulation washer		1
94	TPT 3 x 10		1
95	Rating label	910228-2	1
96	Caution label	910424	1
97	Foamed plastic	910424	1
98	Nylon washer	4 x 8 x 1t	1

The above listed parts are used in units Produced for European markets. The following list specifies parts different from above to be ordered for replacement in U.S. and Canadian model.

No.	Description	Part No.
54	Pwr trans	872730
55	Pwr. cord	892435-1
67	Foam plastic	910424
88	T-T platter	620082-2
89	Rubber mat	871222
95	Rating label	910229-2
96	Caution label	893389
97	Fuse. label	894738-2
98	UL label	894238
99	Factory label	---

All other parts are common to both series.



No.	Description	Drawing No.	Q'ty
1	Aluminum panel	852222-2	1
2	Plastic base	849066-1	1
3	Strobe window	910242-1	1
4	Elevation cylinder	910243	1
5	R gear ass'y	895248	1
6	Clutch plate	894901	1
7	Clutch guide	894902	1
8	Washer, FW 3.2 x 8 x 0.5t		3
9	CS stopper	CS-3	1
10	R gear screw	899724	1
11	Actuating arm	870933-1	1
12	Steel ball		3
13	Actuating base	870932-1	1
14	Control plate ass'y	896487	1
15	Waher, FW 3.2 x 13 x 0.8t		2
16	Screw, BT + 3 x 8		17
17	Spring	899398	1
18	Screw, TPT + 3 x 8		7
19	Reject spindle	897843	1
20	E washer	E-3.2	1
21	Button spring	892084-1	1
22	Push button	899837-1	3
23	Reject lever	897818	1
24	Special screw	896758-3	1
25	Reject spring	898527	1
26	Tonearm rest ass'y	897883-1	1
27	Spring washer	S. SW-3	1
28	Screw, FMT + 3 x 25		1
29	Elevation spindle	899923	1
30	Elevation spring	E-832780	1
31	E washer	E-3	1
32	Elevation plate	896444	1
33	Spring	895021-4	1
34	Screw, FM + 3 x 14		1
35	Cueing arm	899924	1
36	Cueing lever	895677-2	1
37	Cueing lever holding plate	897247	1
38	Cueing lever cap	893914	1
39	I. F. C. knob ass'y	896627-1	1
40	Wave washer	897554	1
41	I. F. C. spring	898637-2	1
42	I. F. C. cam	897547	1
43	Lamp cover(2)	897855	1
44	Lamp holder	897657	1
45	Tonearm ass'y	852228	1
46	Washer, FW 10 x 22 x 0.6t		1
47	Rubber washer	899399	3
48	CS stopper	CS-10	1
49	Feed arm ass'y(2)	893583-3	1
50	Power supply P. C. B.	872840	1
51	Heat sink	910219	1
52	Screw, FM + 3 x 10		1
53	Lock nut, FLN 3		1
54	Power transformer	872832	1
55	Power supply cord	895617	1
56	Micro switch	870270	1
57	Neon lamp	910244-1	1
58	Grounding wire	910459	1
59	Grounding wire	894129	1
60	Connector ass'y	910286	1
61	Push switch	872865	1
62	Potentiometer	703062-3	1
63	Potentiometer bracket	898325	1
64	Wire fastener	894408	12
65	L. F. D.	898727	1
66	Switch P. C. B.	910066	1
67	Insulation sheet	893327	1
68	Screw, M + 2.6 x 15		2
69	Pitch control knob	899838-1	1
70	Lug	890755	5
71	UL tube		5
72	Motor, DDM-515 QF-10		1
73	Pillar	910168	4
74	Screw, FM + 4 x 10		4
75	Washer, FW 4.2 x 12 x 1.0t		4
76	Washer, FW 4.5 x 10 x 1.0t		4
77	Screw, FM + 4 x 16		4
78	Spring washer	S. SW-4	4
79	5P terminal strip	890979	1
80	Phono output cable	871474-2	1
81	Varnished tube		2
82	Star washer	TOW-3	4
83	Power cord holder	898550-1	1
84	Screw, TPT + 3 x 12		6
85	Bottom cover	872839-1	1
86	Rubber foot	897960-5	4
87	Screw, FMT + 4 x 10		11
88	Turntable platter	620082-3	1
89	Rubber mat	871222-1	1
90	Auto hinge ass'y	898532	2
91	Dust cover	851888-4	1
92	45 rpm adaptor	890876	1
93	Insulation washer		1
94	Screw, TPT + 3 x 10		1
95	Rating label	910228-3	1
96	Caution label	893389	1
97	Foamed plastic	910424	1
98	Nylon washer, 4 x 8 x 1t		1
99	UL tube 3/8 x 7L		1

The above listed parts are used in units Produced for European markets. The following list specifies parts different from above to be ordered for replacement in U.S. and Canadian model.

No.	Description	Drawing No.
54	Power trans	872833
55	Power cord	892435-1
57	Neon lamp	910244
62	Potentiometer	703062-2
89	Turntable mat	871222
95	Rating label	910229-3

All other parts are common to both series.

PS48A - PS68A

The PS48A and PS68A share many similarities to the PS48 and PS68. In particular, the motor drive circuits remain essentially the same however the physical layout may be changed in some areas.

Cosmetically these models differ by the use of black colored bases for the PS48 and 68 and a tan color for PS48A and PS68A also the tone arm on the "A" series is a straight arm, black in color while a curved chrome plated arm was used on the PS48 and PS68.

PARTS LISTS

The following parts lists are for reference when ordering replacement parts for the "A" series turntables. Please use the exploded view of the PS48 or the PS68 to identify the item required.

PARTS LIST FOR PS-48A (U.L)

No.	Description	Drawing No.	Q'ty
1			
2	Plastic base	848624	1
3	Turntable bearing ass'y	895092	1
4	Screw. TPT $\odot$ 3 x 8		8
5	Screw. TP $\odot$ 3 x 14		1
6	Star washer. TOW-3		2
7	Flange nut. N-3		2
8	R gear ass'y	895248	1
9	Clutch plate	911565	1
10	Clutch guide	911566	1
11	CS stopper. CS-3		4
12	Washer. FW 3.2 x 8 x 0.5t		2
13	R gear screw	899724	1
14	Actuating arm	873074	1
15	4 ϕ steel ball		3
16	Actuating base	870932-1	1
17	Control plate ass'y	896487	1
18	Screw. BT $\odot$ 3 x 8		8
19	Washer. FW 3.2 x 13 x 0.8t		1
20	Spring	899398	1
21	Power supply P.C.B.	910582-1	1
22	Micro switch	870270	1
23	Neon lamp	894001-3	1
24	Screw. TPT $\odot$ 3 x 10		1
25	Power supply cord ass'y	892435-1	1
26	Power transformer	872290	1
27	Neon lamp holder	897657	1
28	Neon lamp cover (2)	897855	1
29	Screw. TPT $\odot$ 3 x 16		2
30			
31	Screw. FM $\odot$ 2.6 x 14		2
32	Wire fastener	894408	5
33	Spring	911567	1
34	Potentiometer	911386-3	1
35	Push switch	911590	1
36	Switch bracket	911383	1
37	Caution label	893389	1
38	Screen label	910916	1
39	Rubber washer	899399	1
40	Reject spindle	911578	1
41	Reject spring	911577	1
42	Push button	911571	2
43	Tonearm rest ass'y	911569	1
44	Spring washer. S. SW-3		1
45	Screw. FMT $\odot$ 3 x 25		1
46	Elevation spindle	899923	1
47	Elevation spring	E-832780	1
48	E washer. E-3		1
49	Elevation plate	896617	1
50	Spring	895021-4	1

PARTS LIST FOR PS-68A (U.L)

No.	Description	Drawing No.	Q'ty
1			
2	Plastic base	848614	1
3	Strobe window	910242	1
4	Elevation cylinder	910243	1
5	R gear ass'y	895248	1
6	Clutch plate	911565	1
7	Clutch guide	911566	1
8	Washer. FW 3.2 x 8 x 0.5t		2
9	CS stopper. CS-3		1
10	R gear screw	899724	1
11	Actuating arm	873074	1
12	Steel ball		3
13	Actuating base	870932-1	1
14	Control plate ass'y	896487	1
15	Washer. FW 3.2 x 13 x 0.8t		2
16	Screw. BT $\odot$ 3 x 8		12
17	Spring	899398	1
18	Screw. TPT $\odot$ 3 x 8		9
19	Star washer. TOW-4		2
20	Lug		1
21	Spring	911567	1
22	Push button	911571	2
23	Rubber washer	899399	1
24	Reject spindle	911578	1
25	Reject spring	911577	1
26	Tonearm rest ass'y	911569	1
27	Spring washer. S. SW-3		1
28	Screw. FMT $\odot$ 3 x 25		1
29	Elevation spindle	899923	1
30	Elevation spring	E-832780	1
31	E washer. E-3		1
32	Elevation plate	896617	1
33	Spring	895021-4	1
34	Screw. STP $\odot$ 3 x 14		1
35	Cueing arm	899924	1
36	Cueing lever	895677-2	1
37	Cueing lever holding plate	897247	1
38	Cueing lever cap.	893914	1
39	I.F.C. knob	910978	1
40	Wave washer	897554	1
41	I.F.C. spring	898637-2	1
42	I.F.C. cam	897547	1
43	Lamp cover(2)	897855	1
44	Lamp holder	897657	1
45			
46	Washer. FW 10 x 22 x 0.6t		1
47	Rubber washer	899399-2	1
48	CS stopper. CS-10		1
49	Feed arm ass'y	910960-1	1
50	Power supply P.C.B.	873056-1	1

PARTS LIST FOR PS-48A (UL)

Continued

No.	Description	Drawing No.	Q'ty
51	Screw. STP @ 3 x 14		1
52	Cueing arm	899924	1
53	Cueing lever	895677-2	1
54	Cueing lever holding plate	897247	1
55	Cueing lever cap	893914	1
56	I.F.C. knob ass'y	910978	1
57	Wave washer	897554	1
58	I.F.C. spring	898637-2	1
59	I.F.C. cam	897547	1
60	Elevation cylinder	910243	1
61	Rating label	910229-5	
62	Strobe window	910242	1
63	Washer. FW10 x 22 x 0.6t		1
64	Rubber washer	899399-2	1
65	CS stopper. CS-10		1
66	Feed arm ass'y	910960-1	1
67	SP terminal strip	890979	1
68	Phono output cable	871474-2	1
69	Varnished tube		2
70	Screen plate	890959-1	1
71	Motor. DMR-184A-61		1
72	Motor pulley	894021	1
73	Set screw. T @ 2 x 3		1
74	Rubber cushion	242020	3
75	Pipe	234971	3
76	Screw. FM @ 2.6 x 12		3
77	Spring washer. S.SW-2.6		3
78	Fiber washer. 4.7 x 13 x 1t		5
79	Turntable spindle ass'y (2)	895047	1
80	Stopper pin	894271	1
81	Power supply cord holder	898550-1	1
82	Screw. TPT @ 3 x 12		4
83	Bottom cover	872766	1
84	Rubber foot	897960-5	4
85	Screw. FM @ 4 x 12		4
86	Flange nut. N-4		4
87	Transformer cover	898530	1
88	Screw. TPT @ 4 x 12		9
89	Dust cover	851888	1
90	Auto hinge ass'y	898532	2
91	Turntable platter	620053-6	1
92	Rubber mat	852572-1	1
93	Drive belt	700515-B	1
94	45 rpm adaptor	890876	1
95	UL label	894238	1
96	Lug	890755	2
97	UL tube		2
98	Pitch control knob	911570	1
99	Factory label		1
100	Headshell ass'y	911686	1
-1	Cartridge	911685	1
-2	Headshell	852571-1	1
101	Tonearm ass'y with cartridge	852571-3	1

PARTS LIST FOR PS-68A (UL)

Continued

No.	Description	Drawing No.	Q'ty
51			
52			
53			
54	Power transformer	872730	1
55	Power supply cord	892435-1	1
56	Micro switch	870270	1
57	Neon lamp	894001-1	1
58			
59			
60	Connector ass'y	910250	1
61	Push switch	911590	1
62	Potentiometer	911386-2	1
63	Switch bracket	911383	1
64	Wire fastener	894408	3
65	Screw. TPT @ 3 x 16		2
66			
67			
68	Screw. FM @ 2.6 x 14		2
69	Pitch control knob	911570	1
70	Lug		5
71	UL tube		5
72	Motor. DDM-515F-40		1
73			
74	Screw. BT @ 4 x 10		13
75	Screen label	910916	1
76	UL label		1
77	Factory label		1
78			
79	SP terminal strip	890979	1
80	Phono output cable	871474-2	1
81	Varnished tube		1
82	Star washer. TOW-3		2
83	Power cord holder	898550-1	1
84	Screw. TPT @ 3 x 12		1
85	Bottom cover	872839-1	6
86	Rubber foot	897960-5	1
87			4
88	Turntable platter	620082-2	1
89	Rubber mat	852572-1	1
90	Auto hinge ass'y	898532	2
91	Dust cover	851888	1
92	45 rpm adaptor	890876	1
93			
94	Screw. TPT @ 3 x 10		1
95	Rating label	910229-4	1
96	Caution label	893389	1
97	Foamed plastic	910424	1
98	Nylon washer. 4 x 8 x 1t		1
99			
100	Head shell ass'y	911686	1
-1	Cartridge	911685	1
-2	Head shell	852571-1	1
101	Tonearm ass'y with cartridge	852571-3	1



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