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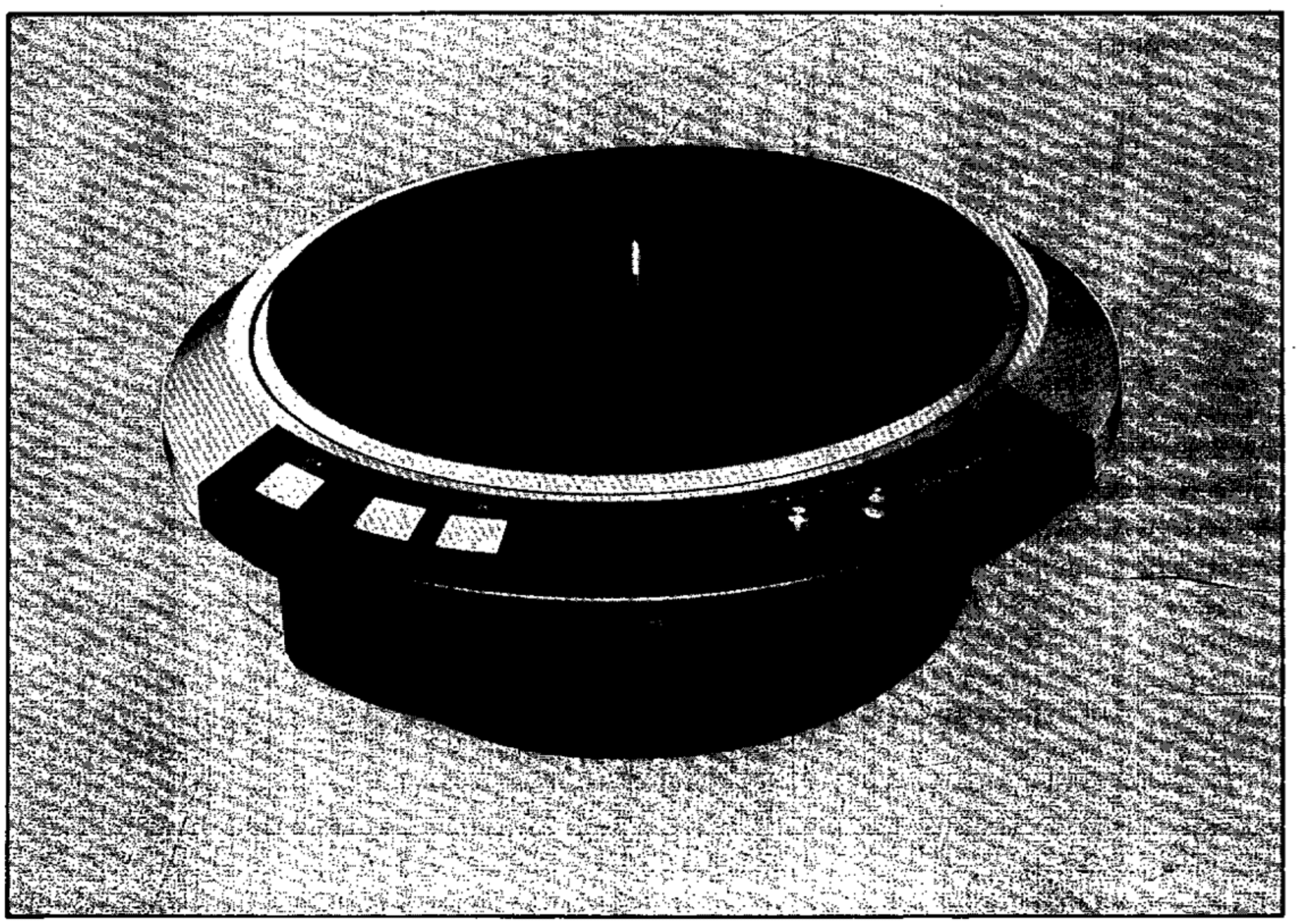
DENON

Hi Fi Component

SERVICE MANUAL

SERVO-CONTROLLED DIRECT DRIVE TURNTABLE

MODEL DP-80



Model DP-80

NIPPON COLUMBIA CO., LTD.

WARNING:

This Model DP-80 is designed to be operated on AC 100 Volts power supply. Therefore, this appliance must be connected to AC 100V output of a separated winding type step-down transformer. The capacity of the step-down transformer should be 50 Volt-ampere or more.
If this is neglected, this appliance may fail to satisfy its specifications of both performance and SAFETY.

SAFETY PRECAUTIONS:

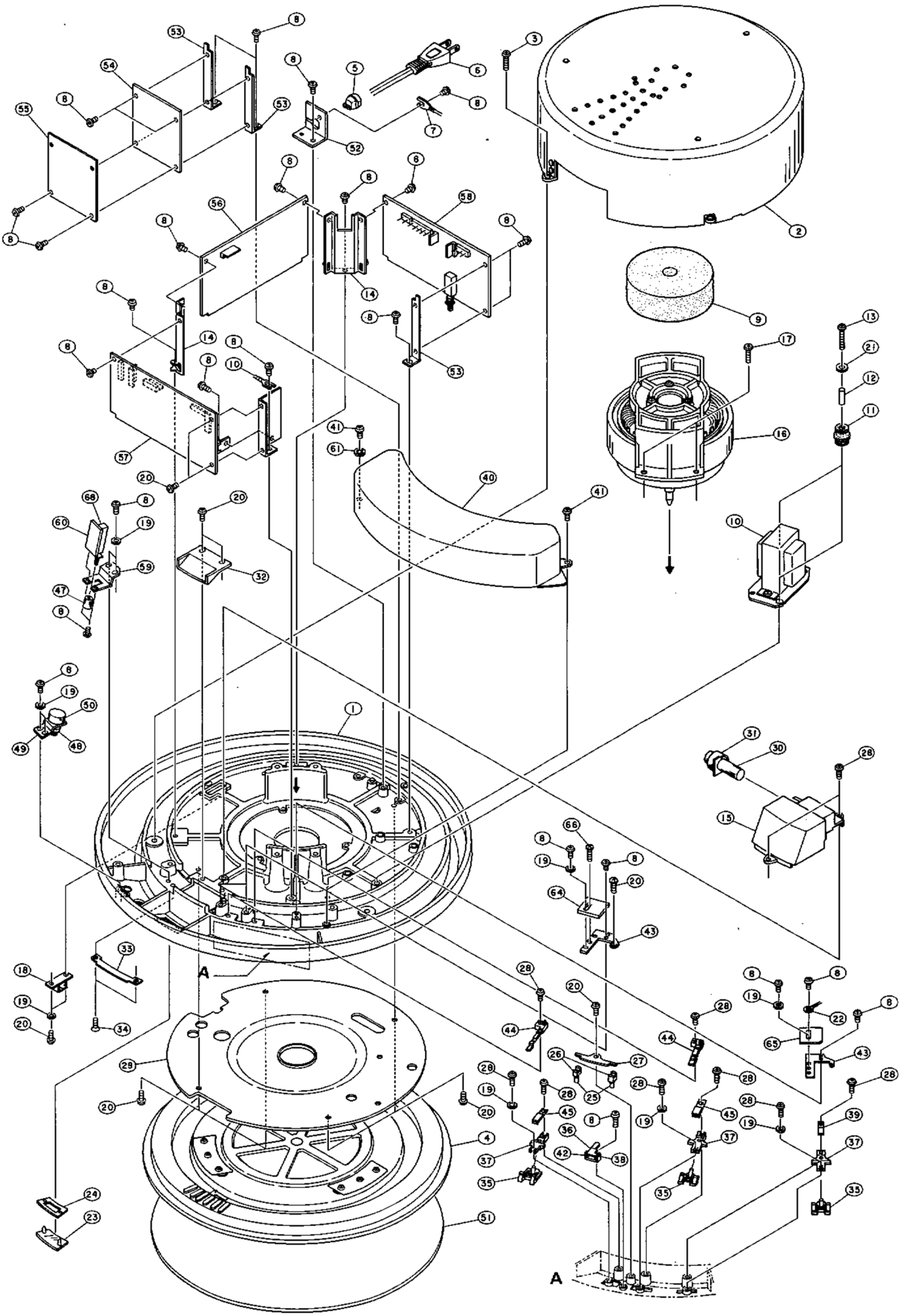
Always use an isolating step-down transformer as discribed above.

- ○ Replace always with correct parts having correct rating, shape and material, etc. Especially the component with shading and ⚠ mark must be replaced only by the specified component for safety reasons.
- ○ For setting up the record player;
  - A) Do not damage the power cord by placing a heavy object on it, or by pinching it between angular objects. Do not fix the power cord by nails, etc. on wall.
  - B) Make sure any metal object such as needle, hair pin or coin are not remaining inside the appliance.
  - C) Give sufficient clearance for ventilation holes. Allow more than 10cm clearance between the rear of cabinet and wall.

Parts list of main body

Ref. No.	Part No.	Part Name	Remarks
1	4468026305	MOTOR BOARD ASS	
2	4498014206	BOARD COVER	
3	4713405011	4 x 12 CBS	
4	4218130108	TURNTABLE ASS	
5	MD-3802	BUSHING	
6	2062023007	AC COARD	
7	FEP-1206	EARTH WIRE	
8	4713301018	3 x 4 CBS	
9	4618031001	PAD	
10	2334015303	POWER TRANS	
11	1298004008	CUSHION RUBBER	
12	4438060003	SPACER	
13	4713410012	3 x 20 CBS	
14	4418204203	CB STAY (B)	
15	1468052107	MIRROR CASE	
16	2078025106	SERVO MOTOR ⚠	
17	4713405011	4 x 10 CBS	
18	3918425004	MAGNETIC HEAD ASS	
19	4751043006	3W	
20	4713303016	3 x 6 CBS	
21	WA-107-4	WASHER	
22	2098005015	EARTH LEAD	
23	1468051001	STROBO WINDOW	
24	4148022001	BLIND	
25	3939012027	SEL103R	
26	4538001108	LED SOCKET	
27	4418161003	SOCKET SUPPORT	
28	4713304015	3 x 8 CBS	
29	4148023301	SHIELD PLATE	
30	3933008011	NEON LAMP WITH CONNE	
31	FM00439	STROBO CAP	
32	1468037009	ACRYL COVER	
33	4148036000	SHUTTER	
34	4712303017	3 x 6 CFS	
35	1138042201	KNOB	
36	4418282005	ACTUATOR	
37	1138043200	KNOB SUPPORT	
38	4438131107	HINGE SHAFT	
39	4418164301	SPRING (A)	
40	4498015108	SWITCH COVER	
41	4713403013	4 x 6 CBS	
42	4418162109	HINGE	
43	4418278006	SW. PLATE	
44	2129052102	LEAF SWITCH	
45	4418223103	SPRING PLATE	
46	4470010106	SPECIAL SCREW	
47	1138033207	KNOB	
48	1138044209	VOLUME KNOB	
49	4418167104	VR. SUPPORT	
50	2118034005	VOLUME (10KΩB)	
51	4218094011	RUBBER SHEET	
52	FE-2361J	BUSH PLATE	
53	4418052206	C.B. STAY	
54	KU-265-87A	LINE FILTER UNIT ⚠	
55	4158008002	INSULATION SHEET	
56	KU-264	QUARTZ SERVO UNIT	
57	KU-263	SERVO CONTROL UNIT	
58	KU-265	MOTOR DRIVE UNIT ⚠	
59	4418166008	PUSH SWITCH SUPPORT	
60	KU-265-87C		
61		4TWB	
62	4178021108	HEAT SINK STAY	
63			
64	KU-265-87D		
65	KU-265-87B		
66	4470010106	SPECIAL SCREW	

EXPLODED VIEW OF MODEL DP-80



ADJUSTMENT

1. Adjustment of head gap

Loosen the two fixing screws and adjust the gap between the magnetic coating surface of turntable platter and the head surface to be approx. 0.2mm.

Note: Variation of this gap causes variation of stopping condition of the platter. Avoid adjustment of head position if it is not absolutely necessary.

2. Confirming regulator voltage

An IC is employed for regulating voltage, allowing no fine adjustment. Confirm this regulated voltage is 5V.

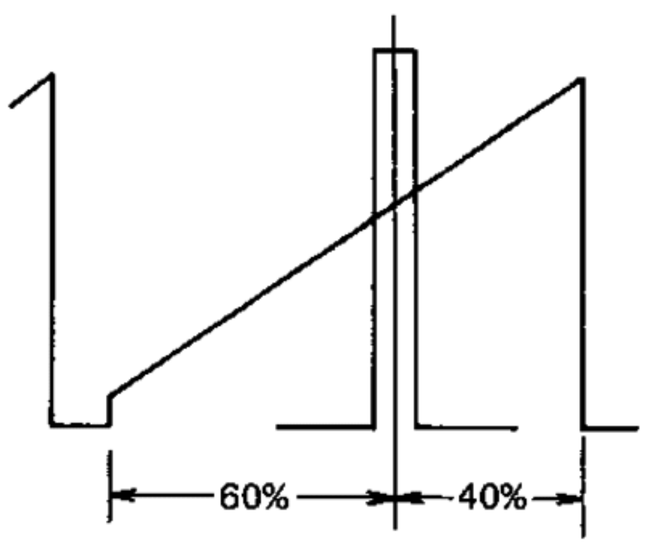
3. Adjustment of speed (KU-264)

3-1 Connect a dual trace oscilloscope to TP-1 on KU-264 P. W. board.

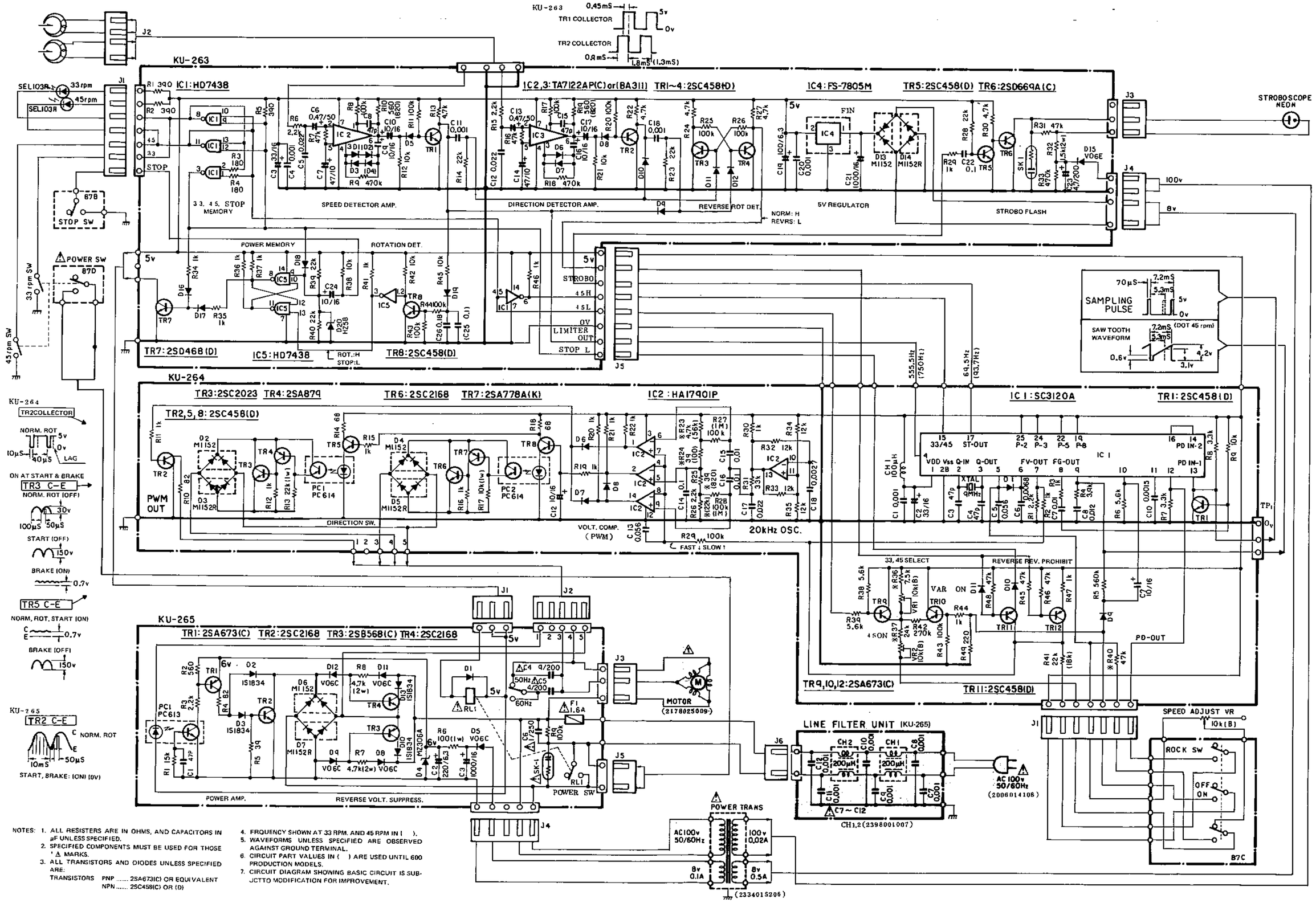
3-2 Set the phase lock button to NORMAL (locked) and obtain 45rpm rotation first.
Adjust VR 2 so that the sampling pulse comes at 60% position from starting edge of the saw tooth waveform. (See below.)

3-3 Change over to 33rpm and adjust VR 1 to bring the pulse at 60% position in the same manner.

Note: If a single trace oscilloscop is used for adjustment, connect the ground terminal of the oscilloscope to the sampling waveform output of TP-1 instead of connecting to ground terminal thereof. Duplexed waveform can be observed.

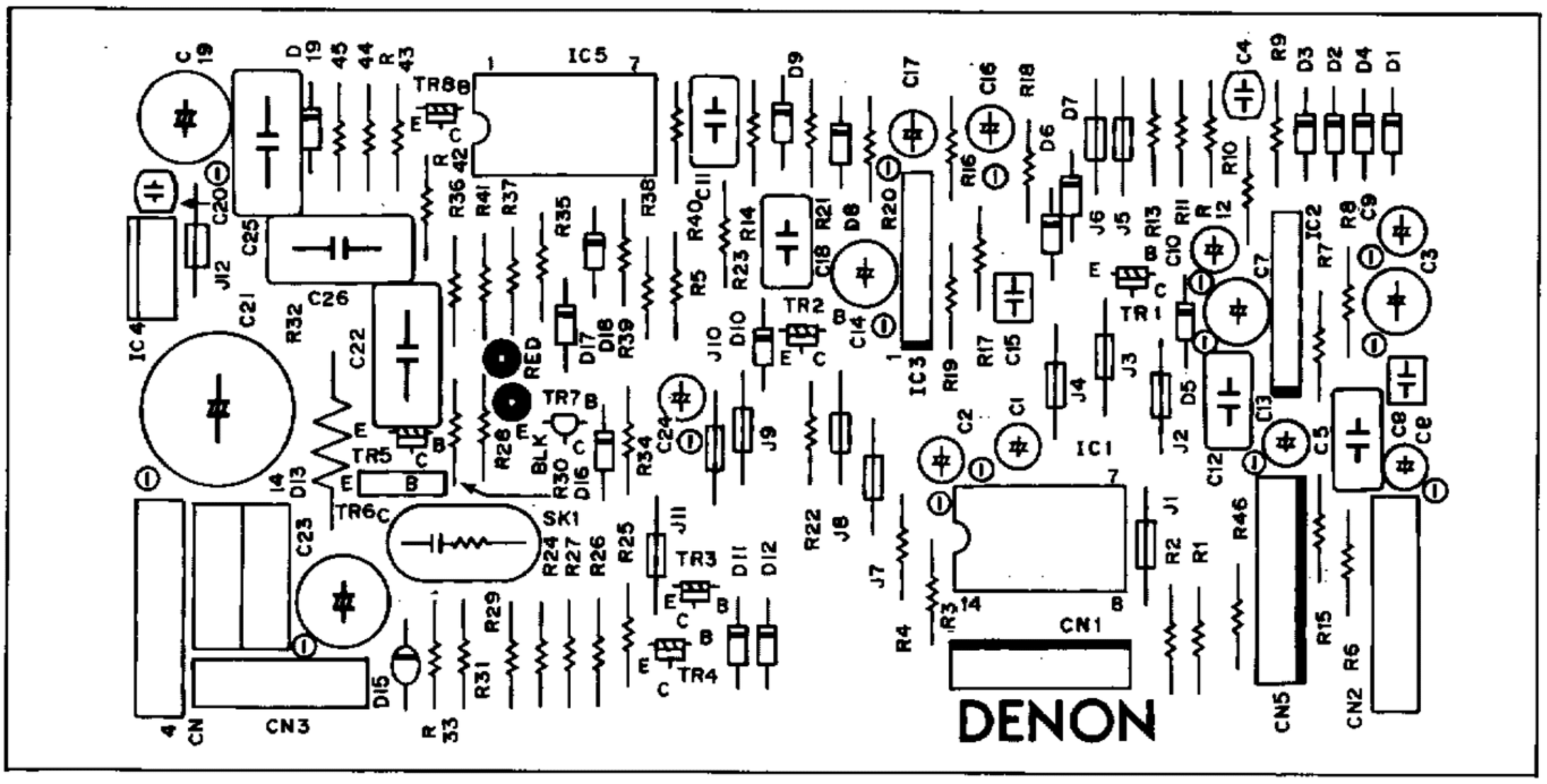


SCHEMATIC DIAGRAM OF MODEL DP-80



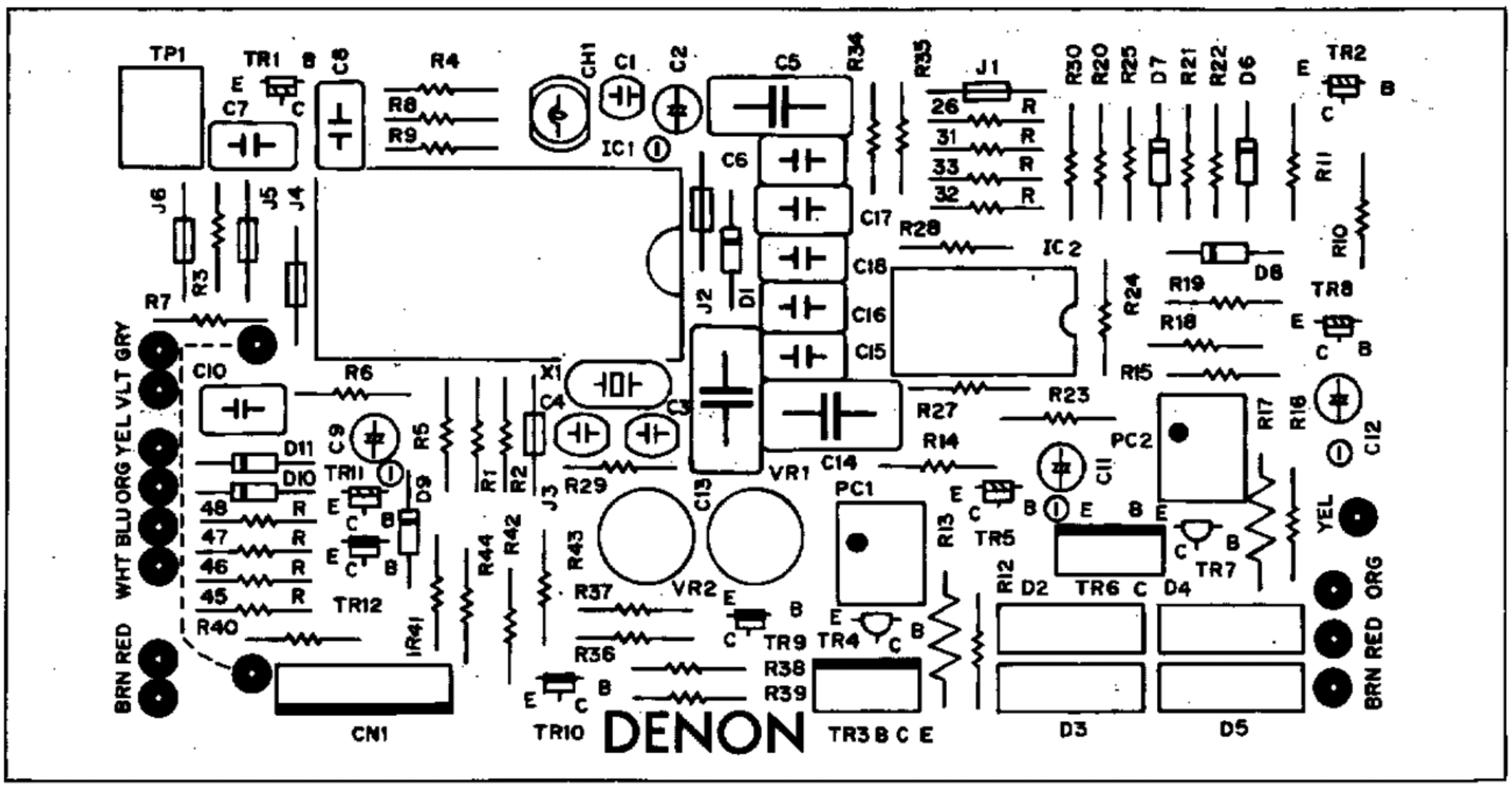
NOTES:
1. ALL RESISTERS ARE IN OHMS, AND CAPACITORS IN μF UNLESS SPECIFIED.
2. SPECIFIED COMPONENTS MUST BE USED FOR THOSE '⚠' MARKS.
3. ALL TRANSISTORS AND DIODES UNLESS SPECIFIED ARE:
   TRANSISTORS PNP ..... 2SA673(C) OR EQUIVALENT
   NPN ..... 2SC458(C) OR (D)
4. FREQUENCY SHOWN AT 33 RPM. AND 45 RPM IN ( ).
5. WAVEFORMS UNLESS SPECIFIED ARE OBSERVED AGAINST GROUND TERMINAL.
6. CIRCUIT PART VALUES IN ( ) ARE USED UNTIL 600 PRODUCTION MODELS.
7. CIRCUIT DIAGRAM SHOWING BASIC CIRCUIT IS SUBJCTTO MODIFICATION FOR IMPROVEMENT.

53-10 DP-80



KU-263 SERVO CONTROL UNIT

Ref. No.	Parts No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC1,5	2620078009	HD7438	
IC2,3	2630094028	TA7122BP(C)	
IC4	2680009005	FS-7805M	
TR1,2,3,4, 5,8	2730021043	2SC458 (D) or (C)	
TR6	2740053001	2SD669A(C)	
TR7	2740038000	2SD467(C)	
D1,3,5,6,7,8 9,10,11,12, 16,17,18,19	2760049008	1S2076	
D13	2760215007	MI152	
D14	2760215010	MI152R	
D15	2760057029	V06E	
D22	2760236002	HZ5B	
RESISTER GROUP			
Resisters of ¼W cabon film type are not listed herein.			
R32	2440100021	RS14B3D152JNB	1.5K ohm 2W
CAPACITRO GROUP			
C3	2544016008	CE04W1C330	33mF 16V Electrolitic
C4,20	2531004007	CK45B1H102K	1000pF 50V Ceramic
C5,12	2551076002	CQ93M1H223K	0.022mF 50V Film
C6,13	2544043000	CE04W1HR47	0.47mF 50V Elec.
C7,14,24	2544009002	CE04W1A470	47mF 50V Elec.
C8,15	2533619005	CC45SL1H470J	47pF 50V Ceramic
C9,10,16,17	2544015009	CE04W1C100	10mF 16V Elec.
C11,18	2551060005	CQ93M1H102K	0.001mF 50V Film
C19	2544018006	CE04W1C101	100mF 16V Elec.
C21	2544022005	CE04W1C102	1000mF 16V Elec.
C22	2551084007	CQ93M1H104K	0.1mF 50V Film
C23	2544073009	CE04W2E4R7	4.7mF 25V Elec.
C26	2551087004	CQ93M1H184K	0.18mF 50V Film
C27	2551064001	CQ93M1H222K	0.0022mF 50V Film
OTHER PARTS GROUP			
	2228085106	P. CIRCUIT BOARD (A)	
	4178021108	HEAT SINK STAY	for IC5
	FEP12802	3P MINICONNE PIN ASS	for Ne. lamp
	FEP12803	4P MINICONNE PIN ASS	for Power xfmr, head
	2035622079	7P MINICONNE PIN	for LED, SW, KU-264
	2035622037	8P MINICONNE PIN	
	FEP0429K	SPARK KILLER	
	2035633000	3P EI RIBBON WIRE PLUG	

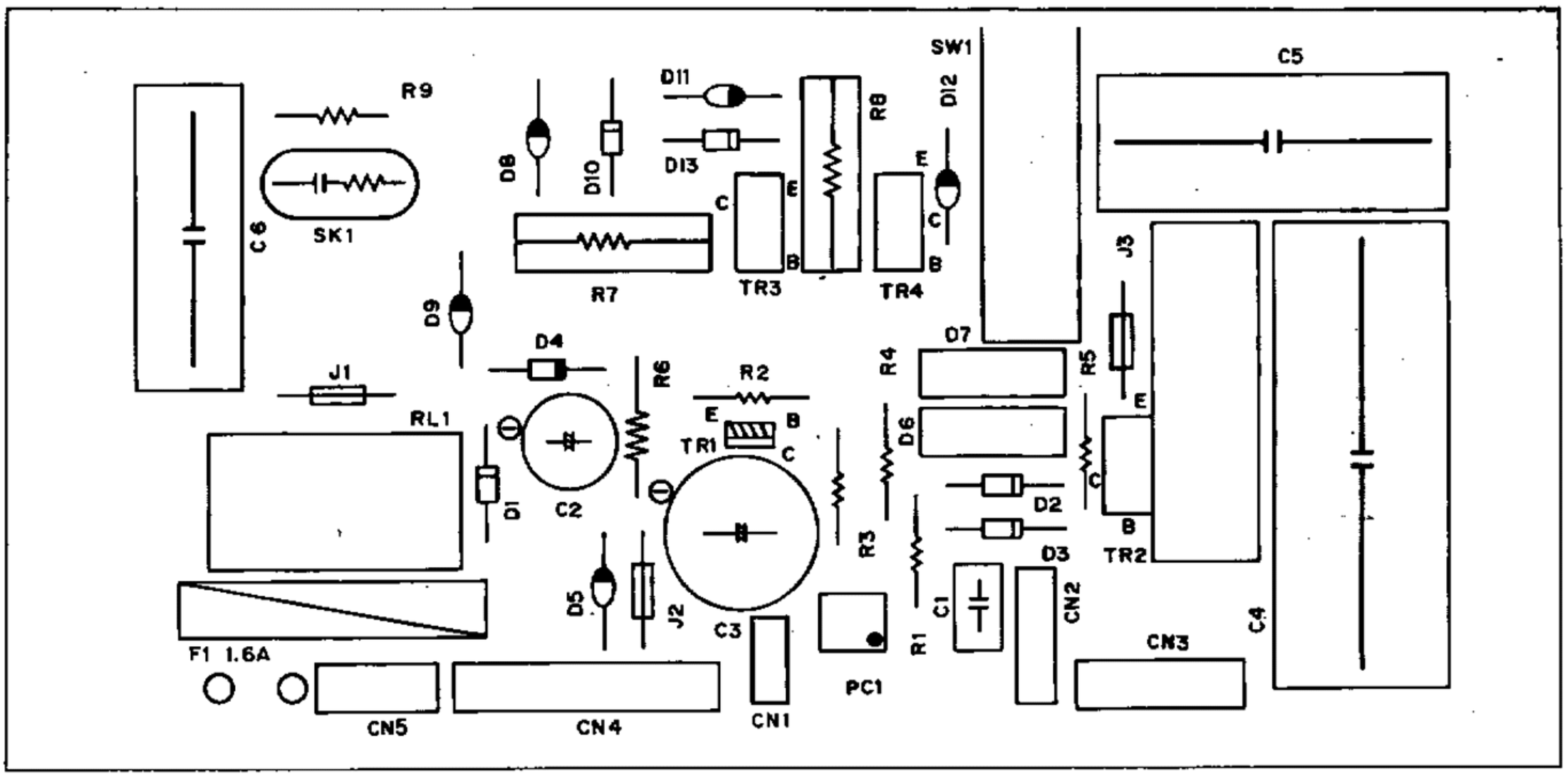


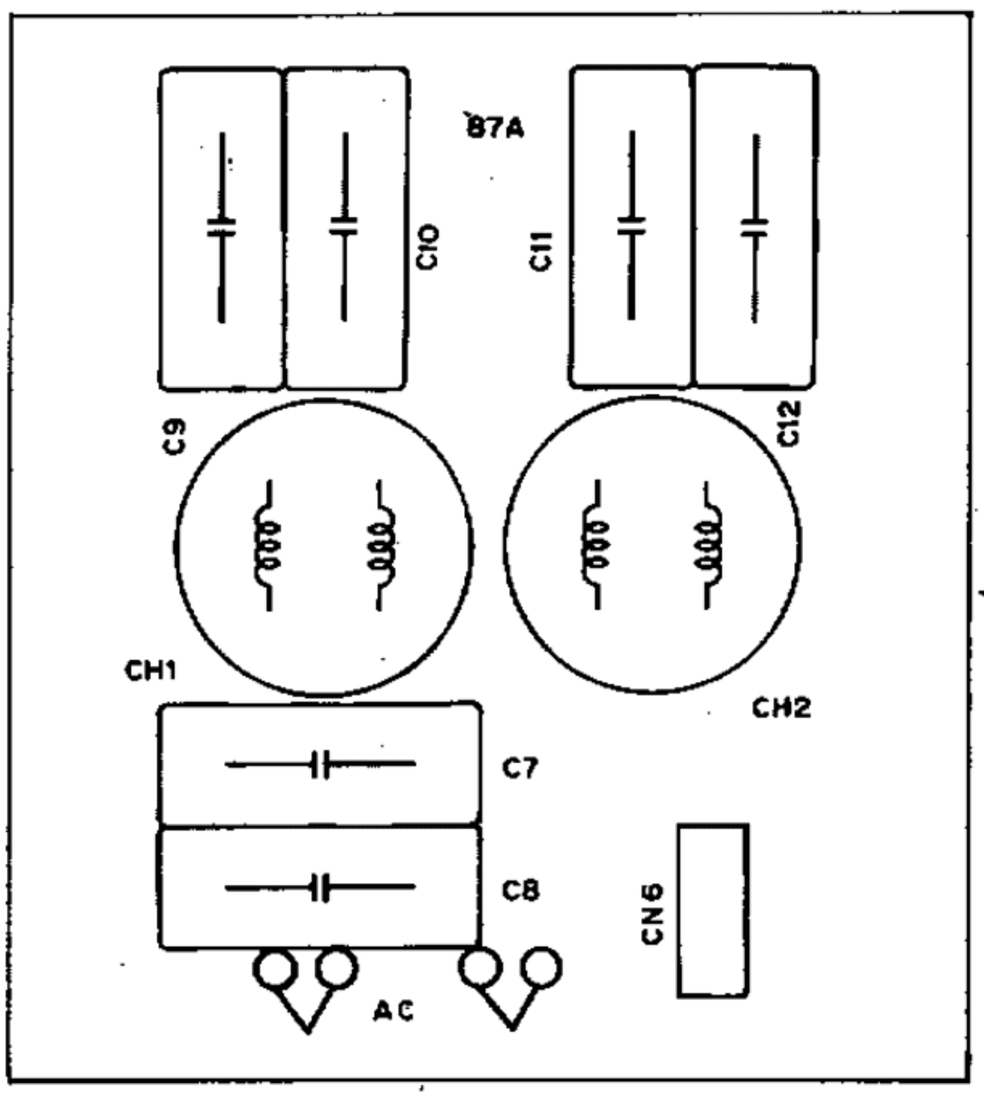
KU-264 QUARTZ SERVO UNIT

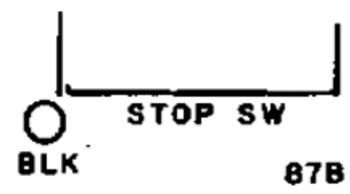
Ref. No.	Parts No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC1	2620075002 or 2620186001	SC3120A	
IC2	2630076004	HA17901P	
PC1,2	3939024002	PC614	
TR1,2,5,8,11	2730021043	2SC458(D) or (C)	
TR3	2730196017	2SC2023	
TR4	2710100010	2SA879 © (R)	(V_{CER}350V, R:10K)
TR6	2738004004	2SC2168 (O)	
TR7	2710086008	2SA778A (K)	
TR9,10,12	2710040028	2SA673 (C)	
D1,6,7,8,9, 10,11	2760049008 ↑	1S2076	
D2,4	2760215007	MI152	
D3,5	2760215010	MI152R	
RESISTER GROUP			
Resisters of ¼W carbon film type are not listed herein.			
R1,26	FEP101135	RN1/4PS2.2KΩG	*2.2K ohm ¼W Metal film
R7	FEP101136	RN1/4PS3.3KΩG	*3.3K ohm ¼W Metal film
R23,40	FEP101119	RN1/4PS4.7KΩG	*4.7K ohm ¼W Metal film
R36	FEP101126	RN1/4PS7.5KΩG	*7.5K ohm ¼W Metal film
R37	FEP10113	RN1/4PS22KΩG	*22K ohm ¼W Metal film *G=±2%
R17	2440053013	RS14B3A103JNBF	10K ohm 1W Metal oxide
R13	2440057022	RS14B3A223JNBF	22K ohm 1W Metal oxide
VR1,2	EP-5462H13	SOLID VOLUME (10KΩ)	10K ohm

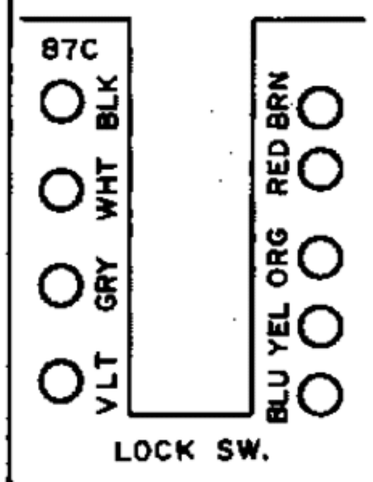
Ref. No.	Parts No.	Part Name	Remarks
CAPACITOR GROUP			
C1	2531004007	CK45B1H102K	1000pF 50V Ceramic
C2	2544016008	CE04W1C330	33mF 16V Elec.
C3,4	2533619005	CC45SL1H470J	47pF 50V Ceramic
C9,12	2544015009	CE04W1C100	10mF 16V Elec.
C5,13	2551081000	CQ93M1H563K	0.056mF 50V Film
C6	2551070008	CQ93M1H682K	0.0068mF 50V Film
C7,15,16	2551072006	CQ93M1H103K	0.01mF 50V Film
C8	2551073005	CQ93M1H123K	0.012mF 50V Film
C10	2551062003	CQ93M1H152K	0.0015mF 50V Film
C14	2551084007	CQ93M1H104K	0.1mF 50V Film
C17	2551076002	CQ93M1H223K	0.022mF 50V Film
C18	2551065000	CQ93M1H272K	0.0027mF 50V Film
OTHER PART GROUP			
	2228086105	P. CIRCUIT BOARD (B)	
	2618007008	CRYSTAL (9MHz)	
	2328008106	INDUCTOR	100μH

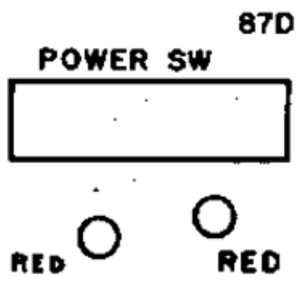
KU-265 MOTOR DRIVE UNIT











KU-265 MOTOR DRIVE UNIT

Ref. No.	Parts No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
TR1	2710040028	2SA673 (C)	
TR2,4	2738004004	2SC2168 (O)	
TR3	2720031001	2SB568 (D)	
PC1	3939027009	PC613	
D1	2760049008	1S2076	
D2,3,10,13	2760184002	1S1834	
D4	2760177019	MZ306A	
D5,8,9,11,12	2760057016	V06C	
D6	2760215007	MI152	
D7	2760215010	MI152R	
RESISTER GROUP			
Resisters of ¼W carbon film type are not listed herein.			
R6	2440029021	RS14B3A101JNBF	100 ohm 1W
R7,8	2440362006	RS14B3D472JNBF	4.7K ohm 2W
CAPACITOR GROUP			
C1	2533619005	CC45SL1H470J	47pF 50V Ceramic
C2	2544004007	CE04W0J221	220mF 6.3V Elec.
C3	2544022005	CE04W1C102	1000mF 16V Elec.
C4	⚠ 2568013061	CF99=2DAC905J	9mF±5% 200VAC Metalized
C5	⚠ 2568013058	CF99=2DAC405J	4mF±5% 200VAC Metalized
C6	⚠ 2568007019	CF99=2EAC105J	1mF±5% 250VAC Metalized
C7,8,9,10,	⚠ 2538004000	CK45=2BAC102P	0.001mF 125VAC Ceramic
OTHER PARTS GROUP			
	2228087308	P. CIRCUIT BOARD (C)	
SK1	FEP0429K	SPARK KILLER	
F1	⚠ 2061018039	FUSE (1.6A)	
RL1	⚠ 2148016006	1T RELAY	
CH1,2	⚠ 2398001007	LINE FILTER COIL	
	2129015000	PUSH SWITCH	50Hz/60Hz
87B,87D	⚠ 2129077006	MICRO SWITCH	Power SW, Stop SW
87C	2129045106	PUSH SWITCH	Phase Lock
	4158008002	INSULATION SHEET	
	4178022107	HEAT SINK	
	2129052102	LEAF SWITCH	33/45 (Not on P.C. Board)

SPECIFICATIONS

PHONO MOTOR

Drive system:	Direct drive by 3-phase AC servo motor
Speeds:	33-1/3 rpm and 45 rpm
Wow/flutter:	Less than 0.015% Wrms*
S/N ratio:	More than 77 dB (DIN-B)
Rise time:	Less than 1.2 sec. to reach 33-1/3 rpm.
Platter:	Casted aluminum alloy, 308 mm diam.
Speed adjustable range:	More than ±6% of nominal speeds (at variable)
Motor:	3-phase AC out-rotor type servo motor
Speed control system:	Speed servo control by frequency detection system combined with phase control system with reference to the quartz crystal oscillator, (Speed servo control only at variable speed mode)
Load influence:	0% (At out-most groove with stylus force of 250g)
Brake system:	Electronic brake
Speed deviation:	Less than 0.002%

GENERAL

Power supply:	AC 100V 50Hz/60Hz
Power consumption:	8W (At out-most groove with stylus force of 2.5g)
Dimensions:	376 diam. X 140(H)(mm)
Weight:	10Kg

* Measured by DENON's method using magnetic pulse wheel.

** Above specifications are subject to alteration without notice.

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