DENON

Hi-Fi Component

SERVICE MANUAL

FULLY AUTOMATIC
DIRECT DRIVE TURNTABLE SYSTEM

MODEL DP-7F SERIES

U.S. and Canadian models do not include cartridge.

NIPPON COLUMBIA CO., LTD.

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WARNING:

1. Component parts
Parts marked with ⚠ and/or shading in this service manual have special characteristics important to safety. Be sure to use the specified parts for replacement.

2. Leakage current
Before returning the appliance to customer, test the leakage current when the power plug is connected. Use a calibrated (with an error of not more than 5%) leakage current tester and measure the leakage current from any exposed metal to the earth ground. Reverse the power plug polarity and test the above again.
Any current measured MUST NOT EXCEED 0.5 milliamps. Corrective measure must be taken if it exceeds the limit.

3. Precautions for work
Do not attempt to turn over the main body without clamping the TONEARM to armrest, and detaching turntable PLATTER and COUNTERWEIGHT.

FEATURES

Silent, fully automatic operations with the use of a microprocessor controlled contactless servo tonearm.
An innovative microprocessor controlled, contactless servo tonearm ensures safe, easy to use automatic operations with little loss in sound quality.

DENON Quartz
The turntable speed is controlled by the "DENON Quartz" which is the combination of the "High Precision Magnetic Pulse Detection Method", the most sophisiticated method of FG detection, and the "Quartz Lock".

Tone arm with a 14P connector
The lightweight straight tone arm that performs excellent tracking has a 14P connector, allowing easy replacement of the cartridge.

SPECIFICATION

Phonomotor section

Drive system:	Servo controlled direct drive
Turntable speeds:	33-1/3, 45 rpm
Wow & flutter:	Below 0.018% wrms (servo system) Below 0.03% wrms (JIS)
S/N ratio:	Over 75 dB (DIN-B)
Rise time:	Normal speed within 2 seconds (at 33-1/3 rpm)
Platter:	Aluminum die-cast; 300 mm diameter
Motor:	Linear drive motor
Speed control system:	Speed servo by frequency detection, phase servo control
Speed deviation:	Below 0.01%
Load characteristics:	0% (70 g Tracking force; outermost groove)

General

Power supply:	50/60 Hz, Voltage is shown on rating label
Power consumption:	6 W
Dimensions:	365 (W) x 96 (H) x 360 (D) mm
Weight:	Approximately 4 kg

Tonearm section

Arm type:	Dynamically balance, semi-integrated straight arm
Effective length:	220 mm
Overhang:	16 mm
Tracking error:	Within 3°
Automatic mechanism:	Electronically controlled, fully automatic

Cartridge section (Only for those models with attached cartridge)

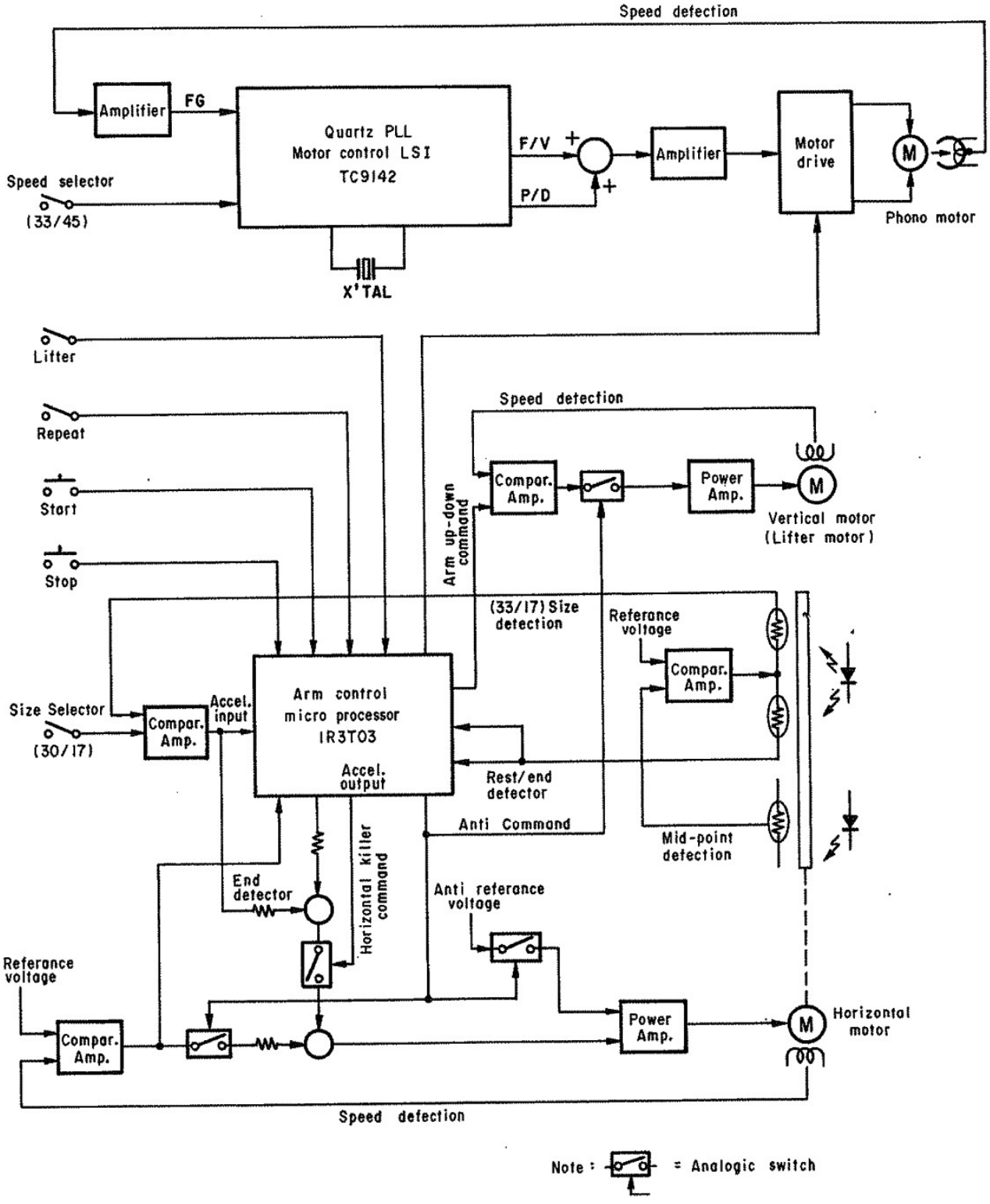
DL-7

Type:	Moving magnet (MM)
Output voltage:	2.5 mV
Frequency response:	20 Hz ~ 20 kHz
Tracking force:	1.5 g ± 0.25 g

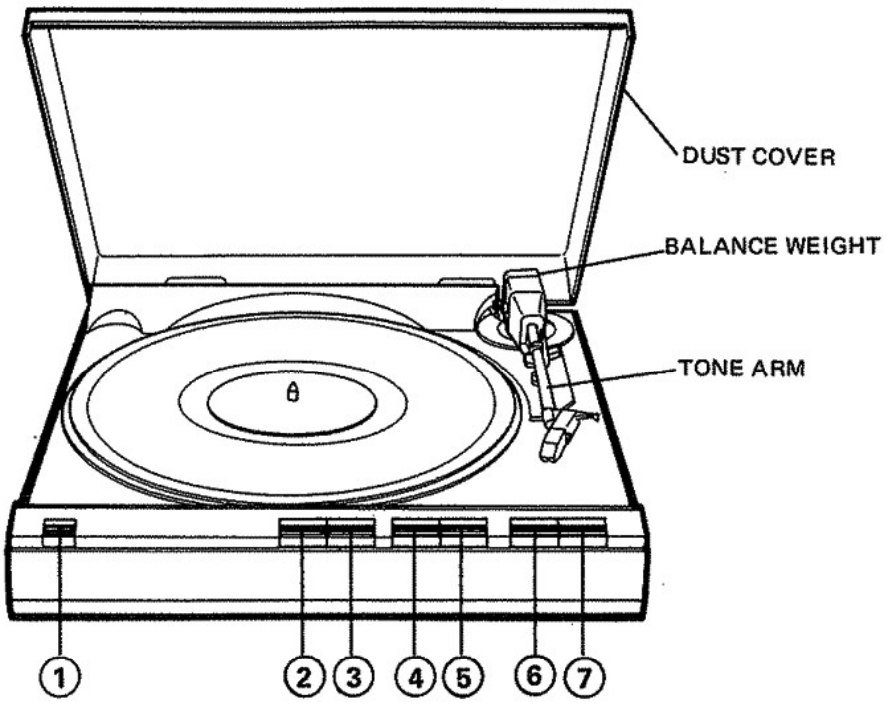
Above specifications and outward appearance may be altered in future for improvement.

U.S. and Canadian models do not include cartridge.

BLOCK DIAGRAM



PART NAMES AND FUNCTION



① **POWER (Power switch)**
This switch turns the power supply on (▬) and off (▀). When turning the power off, always return the tonearm to the arm rest and hold it in place with the clamp.

② **SIZE (Record size selector switch)**
Set to the size of record to be played.
30 cm records ..... (▀)
17 cm records ..... (▬)

③ **SPEED (Speed selector switch)**
Set to the desired record speed.
33-1/3 rpm records ..... (▀)
45 rpm records ..... (▬)

④ **ARM LIFTER (Arm lifter switch)**
This switch is used to raise and lower the arm during play or when playing the records manually.
Down ..... (▀)
Up ..... (▬)

⑤ **REPEAT (Repeat switch)**
When playing the records repeatedly, switch it on (▬).

⑥ **START (Start switch)**
Press this switch when starting the records automatically.

⑦ **STOP (Stop switch)**
Press this switch when stopping the record during play.

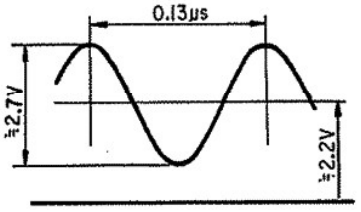
EXPLANATION HOW THE LSI QUARTZ PLL MOTOR CONTROL OPERATES

- **LSI motor control ... TC9142P**
  (33 r.p.m. is set as the standard speed)

- Due to C-MOS construction, handle this IC with extreme care.
- V_{IH} (min.) ... 0.7 x Vcc = 3.5 V
- V_{IL} (max.) ... 0.3 x Vcc = 1.5 V
- In terminals 4, 5, 10, and 11, pull-up resistors are built in.

Terminal 1 : GND

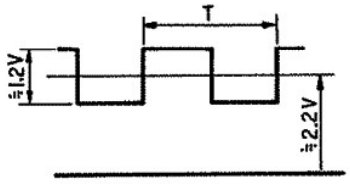
Terminal 2 : OSC OUT (7.68 MHz)



Terminal 3 : OSC IN (7.68 MHz)

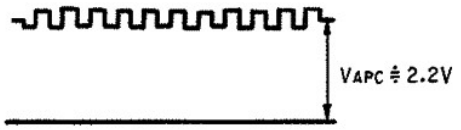
Terminal 4 and 5 : Internal frequency divider ratio switch
Terminals 4 and 5 determine the frequency dividing ratio of the internal frequency divider.

Terminal 6 : FG input



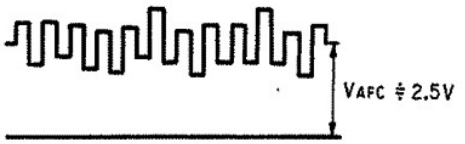
T = 1.8 ms (33 rpm)
= 1.33 ms (45 rpm)

Terminal 7 : APC output (TP-1)
Phase control system output of the motor



Same in either 33 rpm or 45 rpm

Terminal 8 : AFC output
Speed (frequency) control system output of the motor



Same in either 33 rpm or 45 rpm

Terminal 10: 33/45 rpm switch input
L ... 33-1/3 rpm
H ... 45 rpm

Terminal 11: PLAY/STOP input
L ... PLAY
H ... STOP

Terminal 12: Lock detector output
Within locking range ... H
Outside locking range ... L

Terminal 14: Reference frequency input (CR IN)
Connected to terminal 15

Terminal 15: Reference frequency output (CP OUT)
In accordance with the ratio set by terminals 4 and 5, the divided frequency output is obtained.
$7.68 \times 10^6 \div 4 = 1.92$ MHz (center value)
(When terminal 4: H and terminal 5: L)

Terminal 16: Line voltage (Vcc)
Vcc: 5V ± 0.25 V

• Arm Control IC IR3T03

The numbers on the left side indicates the terminal number of the IR3T03.

1. Acceleration input

Except for the matching range of the lead-in detector (E7 $\leqq$ | ±0.6V |), it will recognize the situation and control the acceleration during automatic tonearm operation.

2. Acceleration output

E1 $\leqq$ | ±2.37V ±0.1V | ... open (will not control the acceleration within the matching range)

E1 $\geqq$ | ±2.37V ±0.1V | ... E2 ≒ ±3.95V.

−3.95V : will accelerate toward the inside from rest.

+3.95V : will accelerate toward rest from the inside.

3. UP/DOWN selection of the arm lifter

When E9 is H, the control output for lifting the arm will be made at E3 ≒ −Vcc.

When E9 is L, the control output for lowering the arm will be made at E3 ≒ +Vcc.

4. Detection of the rest position

E4 $\leqq$ −2.64V will be recognized as the arm being at rest.

5. Detection of the END position

When E5 $\geqq$ 2.64V, it will be recognized to be within the END detection range.

E5 $\geqq$ 2.64V when the stylus tip nears the last sections of the sound groove.

6. End control

Within the END detection range of 5 (above), (E5 $\geqq$ 2.64V), the arm will be returned by the END control when E6 $\geqq$ 0.23V.

E5 $\geqq$ 0.23V when the stylus tip moves into the lead-out groove and the arm moves fast.

7. Matching input

E7 $\leqq$ | ±0.6V | will be recognized as the match range for lead-in.

8. Drive output

Connect to GND.

9. UP control output

When the lifter is in the UP position during automatic arm operations or when the UP signal is sent by pressing the arm lifter button, pin 9 will be at H level.

E9H ≒ 4V

E9L ≒ 0V

10. DOWN time constant

To ensure that the arm is lowered completely before proceeding to the next movement, a resistor between pins 9 and 10 and a capacitor on pin 10 has a preset discharge time constant which is somewhat longer than the time required for the arm to be lowered. Thus, when pin 9 becomes L (E9L ≒ 0V), and the fixed amount of time elapses, the arm will be recognized to be DOWN as soon as E10 < 2V.

11. ANT (Anti-skating) control

When E10 < 2V, then E11 ≒ −4V will be the control output needed for the anti-skating to be engaged.

When E10 $\geqq$ 2V, then E11 ≒ +4V will be the control output needed for the anti-skating to be disengaged.

12. Negative power source

Supplies −5V.

14. SUB (substratum)

To prevent any interference from the inner elements of the LSI, the substratum terminal is connected to the regulated side of the negative power source, since it has the lowest electric potential.

15. GND

Standard zero electric potential is the GND.

17. Return control

When the stop command is given, or when the repeat is disengaged and the END is detected (E6 $\geqq$ 0.23V), a control signal output (E17H > 4V) is made to return the arm to rest.

E17H > 4V

E17L: open

18. Horizontal drive control

When the arm is in resting position, or when the arm reaches the lead-in position during automatic play, and comes into the matching range (E7 $\leqq$ | ±0.6V |), a control signal output (E18H ≒ 4V) is made to stop the horizontal motion of the arm.

E18H ≒ 4V

E18L = −5V

19. Initial set

This is the preparation time setting terminal when the power source is turned on. The resistor in the LSI and the outer capacitor will set the charge time constant and carry out the initial set.

20. LCTD (Located) time constant

The LSI and its outer circuits will set the LCTD time constant to improve the detection accuracy of the lead-in position and the arm rest position.

E20H ≒ 1.2V ..... A few moments after the arm reaches the range of detection, in other words, after the set LCTD time constant elapses, it will become H level, where it is memorized immediately and then reset to the L level.

E20L ≒ 0V ..... Before and after detection, it will become L level.

21. Turntable (T/T) Drive Control

E21L ≒ 0V ..... the turntable stops

E21H open ..... the turntable rotates

(refer to the operational explanations for pin 22)

22. Turntable (T/T) Start Position

This terminal establishes the turntable start position. The turntable will start when the arm separates from the arm rest and pin 22 is opened, under manual and auto modes.

23. Start

Will start automatically at the GND level.

24. Auto stop

Will stop automatically at the GND level.

25. Lifter

Will raise the lifter automatically at the GND level.

26. Repeat

Will engage the repeat automatically at the GND level.

27. UP SW

An UP time constant circuit is used so that when the lifter is in the UP condition, this terminal is open and becomes H level; and at other times, it becomes GND level.

With this unit, the arm will start to move approximately two seconds after the UP command.

28. Positive power supply

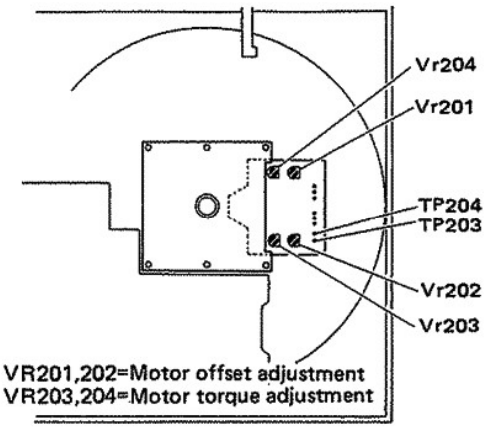
Supplies +5V.

ADJUSTMENT METHOD

* Prepare a two-channel oscilloscope for the measuring instrument.

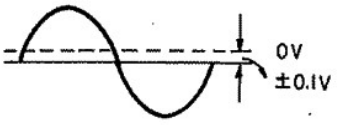
• Adjusting the Phonomotor Section

* Measure, using the wrapping terminal number 8 of the motor drive circuit board as the ground reference point when adjusting the motor OP amp. voltage offset and the motor torque.



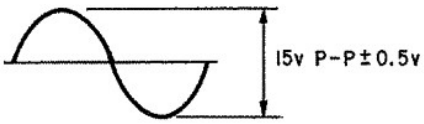
1. Adjusting the motor amp. offset voltage

1) Fix the tonearm to the arm rest and connect the oscilloscope to TP 203 and 204.
2) Rotating the turntable by hand, adjust the center of amplitude at TP 203 to 0 ±0.1V by turning VR 201.
3) Following the preceding directions adjust to 0 ±0.1V by turning VR 202 for TP 204.



2. Adjusting the motor torque

1) Leave the oscilloscope connections as they were for the motor OP amp. voltage offset adjustments.
2) Take the turntable off the main body; move the tonearm close to the speed detection head and rotate the phonomotor at a fast speed.
   (Note) Be very cautious as not to damage the cartridge during this procedure.
3) For T.P. 203, rotate VR 203 and adjust to 15VP-P ±0.5V.
4) For T.P. 204, rotate VR 204 and adjust to 15VP-P ±0.5V.



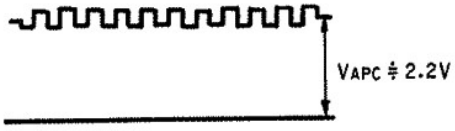
3. Adjusting the head gap

Adjust, so that the gap between the turntable magnetic coating surface and the detection head is 0.18 mm.

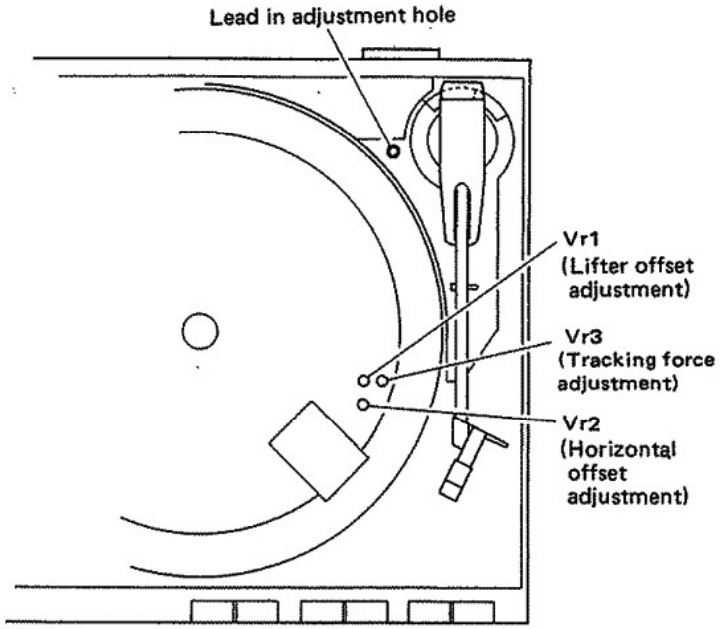
4. Checking the 33 r.p.m. and 45 r.p.m. locks

From now on, use test point "G" of the servo control circuit board as the earth reference point of the measuring instrument.

1) Connect an oscilloscope to test point TP-1.
2) Make sure to check that the voltage of TP-1 at normal speed is approximately 2.2 V.



• Adjusting the Arm Control Section



1. Adjusting the horizontal OP amp. offset voltage

1) Fix the tonearm to the armrest and connect the oscilloscope to T.P. 5.
2) Set the lifter switch to the UP condition.
3) Turn VR2 and adjust to 0V ±0.01V.

2. Adjusting the lifter OP amp. offset voltage

1) Fix the tonearm to the armrest and connect the oscilloscope to T.P. 6.
2) Set the lifter switch to the DOWN condition.
3) Turn VR1 and adjust to −2.6V ±0.1V.

3. Adjusting the tracking force

1) Confirm that the lifter is in DOWN condition. If the lifter switch is set to UP condition, set it to DOWN, and wait five seconds after the tone arm is in DOWN condition.
2) Put the tip of stylus on the stylus pressure gauge.
   (Note) At this time, the stylus tip height should be adjusted so that it is about the same height as during play.
3) Turn VR3 and adjust, so that the tracking force gauge reads 1.5 g.
   (Note) If the cartridge is other than DL-7, adjust it to 1.25 g.

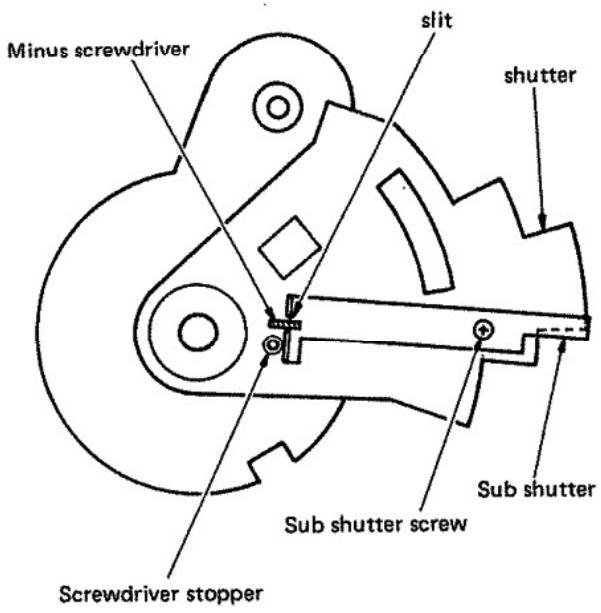
4. Adjusting the 30 cm lead-in position

1) Place a 30 cm record on the turntable and set the record size selector switch to "30".
   (Note) Keep the bottom cover closed.
2) Move the arm so that the stylus tip is at approximately the 30 cm lead-in position. Insert a small flat-headed screwdriver into the lead-in adjustment hole; move the arm back and forth and fit the screw driver into the groove of the cam inside gently.
3) After turning the screwdriver, pull it out. Press the start switch and adjust so that the stylus position stops at the 30 cm lead-in position.
   (Note) The 30 cm lead-in adjustments cannot be performed unless the stylus tip position is approximately in the 30 cm lead-in position. In addition, if the screwdriver is left inserted, the arm will not move.

5. Adjusting the 17 cm lead-in position

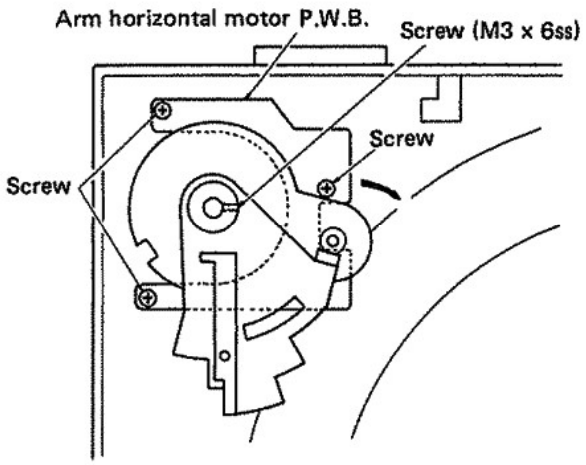
Adjust as necessary, such as when parts of the sensor section have been replaced.
However, the following procedures should only be used when a discrepancy is found for the 17 cm lead-in position, after the 30 cm lead-in position has been adjusted.

1) Set the record size selector to 17 cm.
2) By continuously pressing the start switch, the arm will move over and stop. At this time, check now many millimeters, toward the inside or outside, the stylus tip deviates from the required 17 cm lead-in position.
3) Take off the bottom cover of the cabinet.
4) Untighten the screw holding the sub shutter and place a small screwdriver into the slot of the shutter. When the stylus position is toward the inside, compared to the required position, move the sub shutter toward the right; when the stylus position is toward the outside, move the sub shutter toward the left. When completed, tentatively tighten the screw holding the sub shutter.
5) After the adjustments are made, press the start switch and check whether or not the stylus stops at the 17 cm lead-in position.
6) If the stylus stops at the required position, then tighten the sub shutter screw.



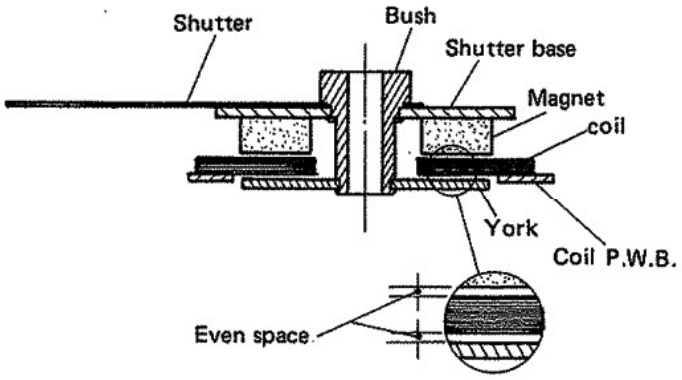
Dismantling of Auto Mechanism Assembly

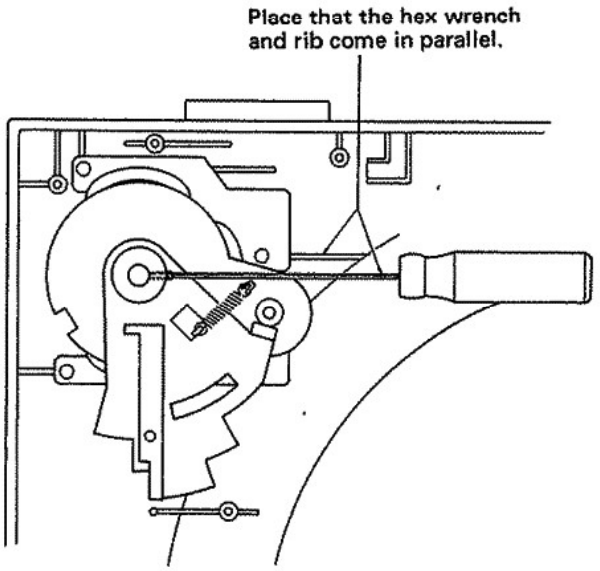
1) Remove 3 screws holding the arm horizontal motor P.W.B.
2) Avoid scratching the coil, carefully detach the P.W.B. along the rail under the P.W.B.
3) Unfasten the screw (3x6ss) with hex wrench and dismantle the auto mechanism assembly.



Placing of Auto Mechanism Assembly

1) Put the output leads of tone arm through the hole on auto mechanism assembly and place the assembly into the tone arm shaft. Be careful not to damage the output leads.
2) By lifting the assembly gently insert the arm horizontal motor P.W.B. to the place between the yoke and magnet confirming that the coil will not touch any place. Then temporarily fasten the screw (3x6ss) with hex wrench not too tight.
3) Fasten 3 screws and secure the arm horizontal motor P.W.B.
4) Loosen the screw (3x6ss) temporarily fasten the auto mechanism assembly with hex wrench. Adjust a air gap between the magnet to coil and the coil to yoke for even, and firmly tighten the screw (3x6ss) at the place that the hex wrench and rib come in parallel.





CAUTION

Never try to turn over the main body without confirming the removal of turntable PLATTER and COUNTERWEIGHT.

PARTS LIST OF EXPLODED VIEW

PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks
1	1030781411	CABINET	
	1030781424	CABINET	E1 only
2	4140377000	SHIELD PLATE	
3	4310149000	FRICTION SHEET	
4	3158911116	ARM REST ASS'Y	
5	4620055101	BUSHING	
6	1130654121	BUTTON (B) ASS'Y	
7	1130653229	BUTTON (A) ASS'Y	
8	3150282102	TONE ARM ASS'Y	
	3150319004	TONE ARM ASS'Y	EU only
9	3150304006	WEIGHT ASS'Y	
10	3160004008	CARTRIDGE	except EU
11	4756133007	14N	
⚠ 12	2335495100	POWER TRANS	EU
	2339060007	POWER TRANS	E1
	2339059005	POWER TRANS	E2, EA
13	4620027003	RUBBER BUSH	
14	4751106042	WASHER	
15	FG-330	MOTOR	
16	4410481008	HEAD SUPPORT	
⚠ 17	2062019008	AC CORD WITH PLUG	EU
	2006031026	AC CORD	E1
	2062002031	AC CORD WITH PLUG	E2
	2006019307	AS 3P AC CORD	EA
18	KU-5520	SERVO CONTROL UNIT	
19	4330396309	AUTO MECHA ASS'Y	
20	4248019202	ADJUST CAM	
21	3158451003	FRICTION WASHER	
22	4338243001	SUB SHUTTER	
23	4638225004	SPRING	
24	2390005001	COIL ASS'Y	
25	4148181007	SHIELD SHEET	
26	2033642103	OUTPUT CORD ASS'Y	
	2031640000	OUTPUT CORD ASS'Y	EU only
27	3918423006	MAGNETIC HEAD	
28	1050632003	BOTTOM BOARD	
29	1040116102	INSULATOR	
30	4218312007	RECORDED TURNTABLE	
31	4218288005	RUBBER SHEET	
	4218288018	RUBBER SHEET	EU only
32	1460729108	DUST COVER	
33	4010101209	SPRING HINGE	
34	KU-5530	MOTOR DRIVE UNIT	
35	3150324002	STYLUS COVER	
⚠ 36	2124337000	VOLTAGE SELECTOR SW.	E1 only
40	KU-55201	CDS P.W.B	
41	KU-55202	LED P.W.B	
42	KU-55203	POWER SW P.W.B	
43	KU-55204	SW STOPPER P.W.B	
44	2098019043	EARTH LEAD	
45	2129180003	PUSH SWITCH	
51	4737500031	3x12 CBTS(P)	
52	4737501014	3x14 CBTS(P)	
53	4713303016	3x6 CBS	
54	4751005004	4W	
55	4761003009	3E RING	
56	4711810019	2x3 CPS	
57	4770032003	3x6 SS	
58	4700009019	3x6 CPSW	
59	4711816000	3x6 CPS	

ACCESSORIES AND PACKING GROUP

Ref. No.	Part No.	Part Name	Remarks
	5298006002	45 ADAPTOR	
	4490025002	SUB WEIGHT ASS'Y	
	5111283009	INSTRUCTION MANUAL	
	3150323003	CARTRIDGE LOCK ASS'Y	EU only
⚠	2033667007	PLUG ADAPTER	E1 only
	5030476104	PACKING ASS'Y	
	5011015018	CARTON CASE	
	5028125111	BOTTOM PLATE	
	5028127009	UPPER PLATE	
	5058017024	ENVELOPE	350x350
	5050109008	POLY SHEET	60x250
	5050111009	LAMINATE SHEET	500x600
	5058006006	ENVELOPE	60x100

WARNING:
Parts marked with ⚠ and/or shading have special characteristics important to safety. Be sure to use the specified parts for replacement.

Remark symbols in the parts list refer to the following countries and areas.

EU: U.S.A.
E1: Multiple voltage model
E2: European continent
EA: Australia

KU-5520 SERVO CONTROL UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC1	2630271003	TC9142P	
IC2	2630174003	IR3T03	
IC3, 4	2630257001	M5218P	
IC5	2630237005	LA6358	
IC6	2630198005	NJM4556D	
IC7	2620276005	HD14066BP	
IC8	2630147001	μPC78M05H	
IC9	2630160004	μPC7905H	
TR1	2730021043	2SC458(D)	
TR2	2710183008	2SA933(S)	
TR3~7	2730021043	2SC458(D)	
TR8	2740046005	2SD468A(C)	
TR9	2720025004	2SB562(C)	
TR11	2710183008	2SA933(S)	
D1~9	2760049008	1S2076	
D10~13	2760237001	RV06	
D14~19	2760049008	1S2076	
LED1, 2	3939041001	LN81RP-HL	
CDS1, 2	3939053002	CDS	
CDS3	3939053028	CDS	
RESISTOR GROUP			
VR1, 2	2116000073	V08PB203	20kΩB
VR3	2116000015	V08PB103	10kΩB
CAPACITOR GROUP			
C1	2544146004	CE04W1H010=	1μF 50V
C2	2533637003	CC45SL1H271J	270pF 50V
C3	2544146004	CE04W1H010=	1μF 50V
C4	2539036006	CK45=1E104Z	0.1μF 25V
C5	2533637003	CC45SL1H271J	270pF 50V
C6	2544146004	CE04W1H010=	1μF 50V
C7	2544132005	CE04W1C100=	10μF 16V
C8	2539036006	CK45=1E104Z	0.1μF 25V
C9, 10	2533603008	CC45SL1H100D	10pF 50V
C11	2533611003	CC45SL1H220J	22pF 50V
C12	2544146004	CE04W1H010=	1μF 50V
C13	2551122082	CQ93M1H224J	0.22μF 50V
C14, 15	2531004007	CK45B1H102K	0.001μF 50V
C16	2544129005	CE04W1A470=	47μF 10V
C17	2544134003	CE04W1C330=	33μF 16V
C18	2544136001	CE04W1C101=	100μF 16V
C19	2539036006	CK45=1E104Z	0.1μF 25V
C20	2544132005	CE04W1C100=	10μF 16V
C21	2544136001	CE04W1C101=	100μF 16V
C22, 23	2539036006	CK45=1E104Z	0.1μF 25V
C24	2544132005	CE04W1C100=	10μF 16V
C25~28	2539036006	CK45=1E104Z	0.1μF 25V
C29	2544086009	CE04W1E222M	2200μF 25V
C30	2544080005	CE04=1E102M	1000μF 25V
C31	2539036006	CK45=1E104Z	0.1μF 25V
C32	2531004007	CK45B1H102K	0.001μF 50V
C33	2544132005	CE04W1C100=	10μF 16V
C34, 35	2531004007	CK45B1H102K	0.001μF 50V
C36	2539036006	CK45=1E104Z	0.1μF 25V
C37	2533627000	CC45SL1H101J	100pF 50V
C38	2551122008	CQ93M1H473J	0.047μF 50V
C39	2533637003	CC45SL1H271J	270pF 50V
C40	2533627000	CC45SL1H101J	100pF 50V
C41, 42	2539036006	CK45=1E104Z	0.1μF 25V
C43	2544146004	CE04W1H010=	1μF 50V
C44	2539036006	CK45=1E104Z	0.1μF 25V
C45	2551121025	CQ93M1H103J	0.01μF 50V
C46	2539036006	CK45=1E104Z	0.1μF 25V
C47	2531004007	CK45B1H102K	0.001μF 50V
C48	2544136001	CE04W1C101=	100μF 16V
C49,50	2539036006	CK45=1E104Z	0.1μF 25V
C51	2544147003	CE04W1H2R2=	2.2μF 50V
OTHER PARTS GROUP			
X'tal	3998037001	CRYSTAL	7.68MHz
S1~2	2124526002	PUSH SW	
S3,4	2124527001	TACT SW	
S5~6	2124526002	PUSH SW	
S7	2129180003	PUSH SW	POWER
	2050158023	2P TERMINAL	
	2050158036	3P TERMINAL	
	2050158049	4P TERMINAL	
	2050185038	3P WIRE HOLDER	
	2050185041	4P WIRE HOLDER	
	2050185054	5P WIRE HOLDER	
	2050185067	6P WIRE HOLDER	
	4438568107	LED HOLDER	

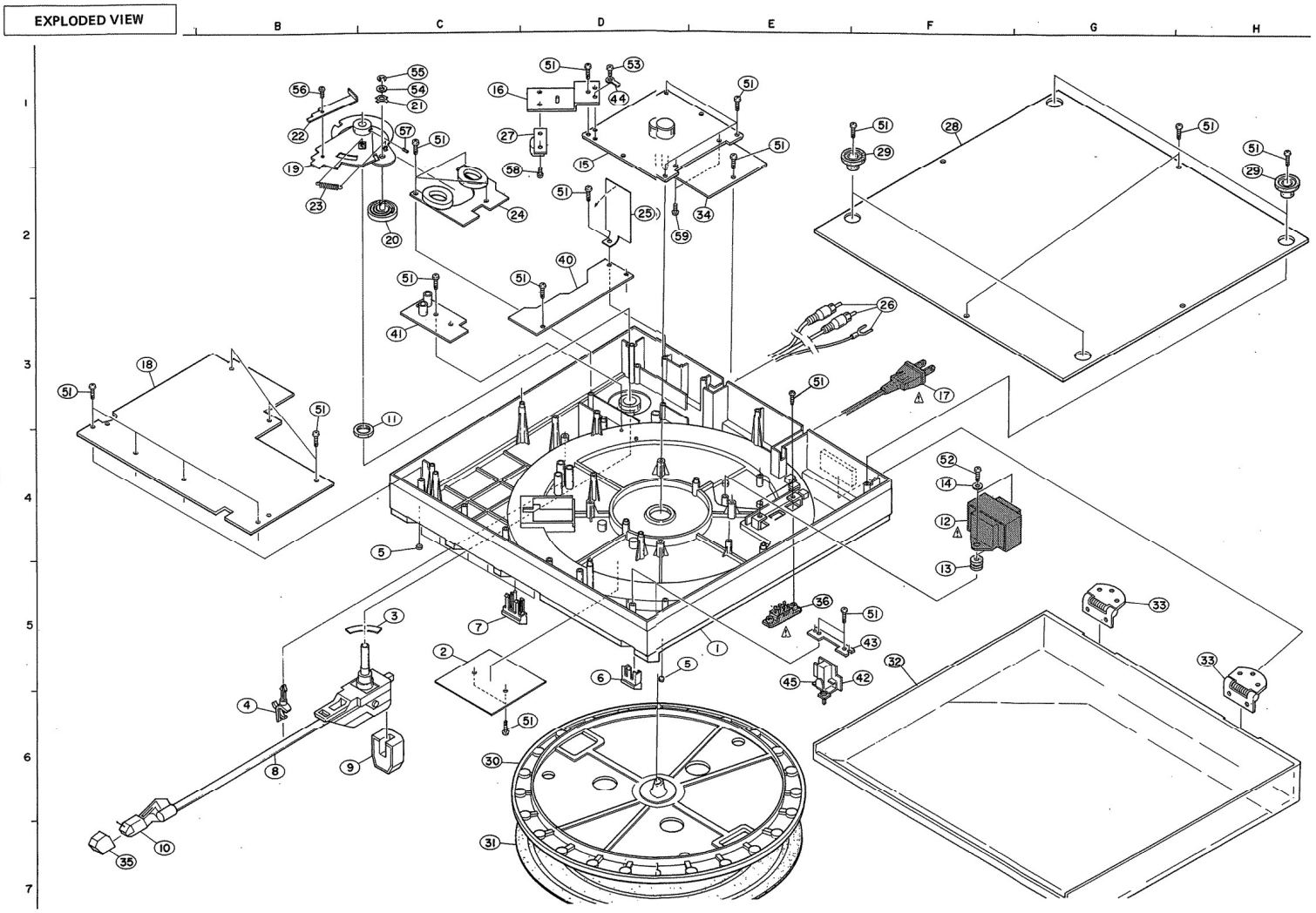
• The carbon resistors rated at ¼W are not listed herein.

KU-5530 MOTOR DRIVE UNIT

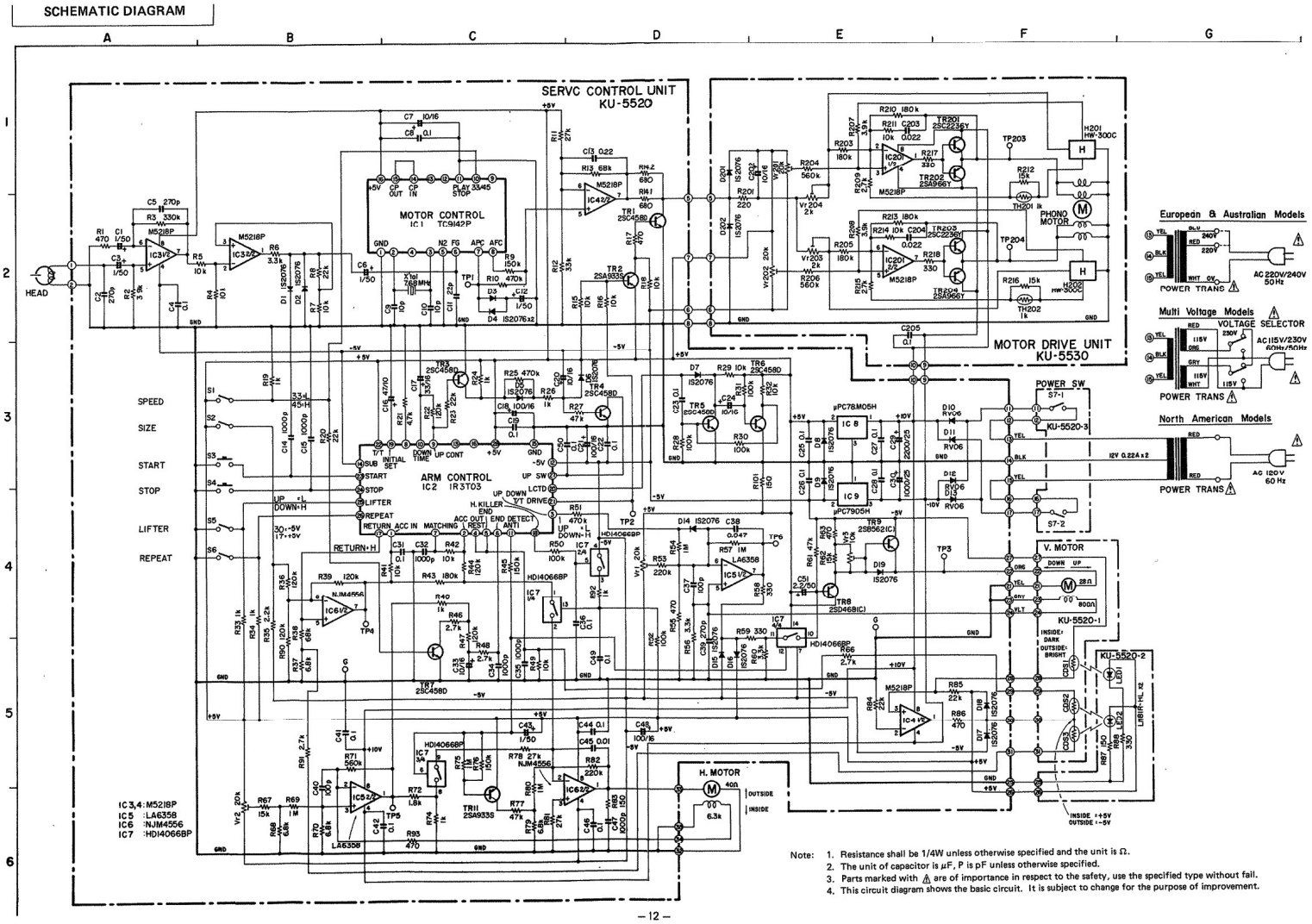
Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC201	2630257001	M5218P	
TR201	2730201009	2SC2236(Y)	
TR202	2710105002	2SA966(Y)	
TR203	2730201009	2SC2236(Y)	
TR204	2710105002	2SA966(Y)	
D201, 202	2760049008	1S2076	
TH201, 202	2760311008	TD5C210D	
H201, 202	2760376001	HW-300C	
RESISTOR GROUP			
VR201, 202	2116000073	V08PB203	20kΩB
VR203, 204	2116000099	V08PB202	2kΩB
CAPACITOR GROUP			
C202	2544132005	CE04W1C100=	10μF 16V
C203, 204	2551076002	CQ93M1H223K	0.022μF 50V
C205	2531027000	CK45F1H104Z	0.1μF 50V

• The carbon resistors rated at ¼W are not listed herein.

EXPLODED VIEW

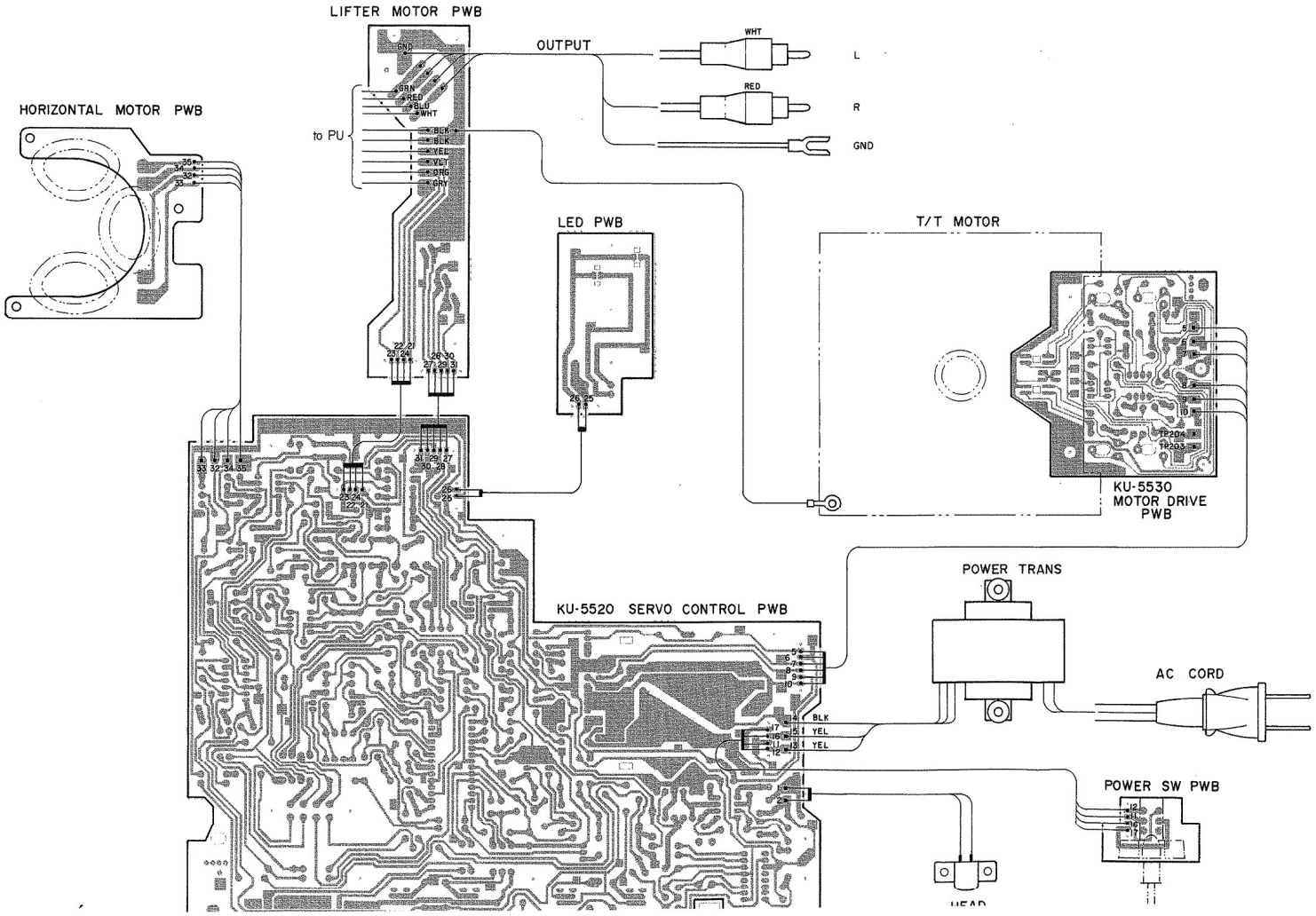


SCHEMATIC DIAGRAM

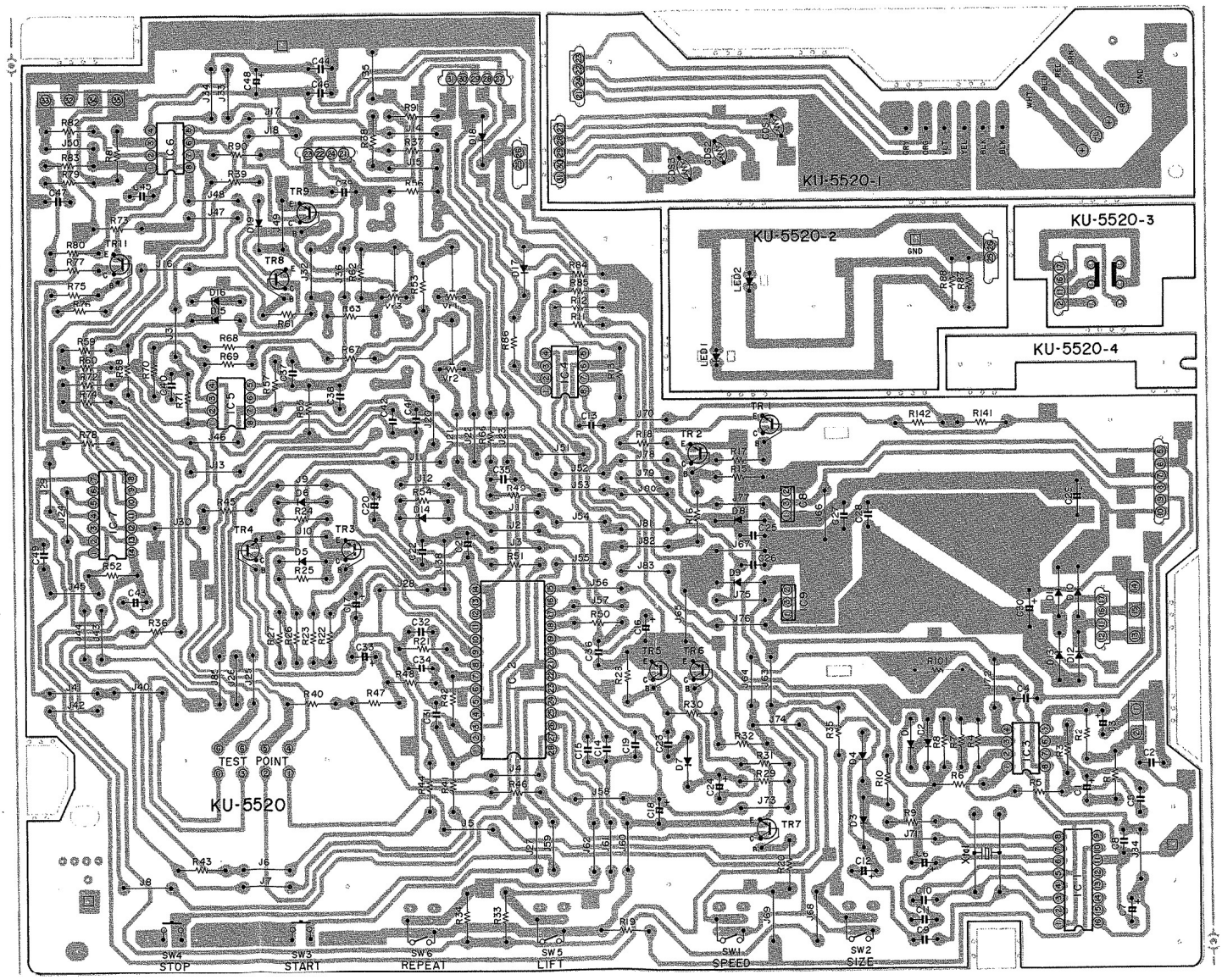


Note:
1. Resistance shall be 1/4W unless otherwise specified and the unit is Ω.
2. The unit of capacitor is μF, P is pF unless otherwise specified.
3. Parts marked with ⚠ are of importance in respect to the safety, use the specified type without fail.
4. This circuit diagram shows the basic circuit. It is subject to change for the purpose of improvement.

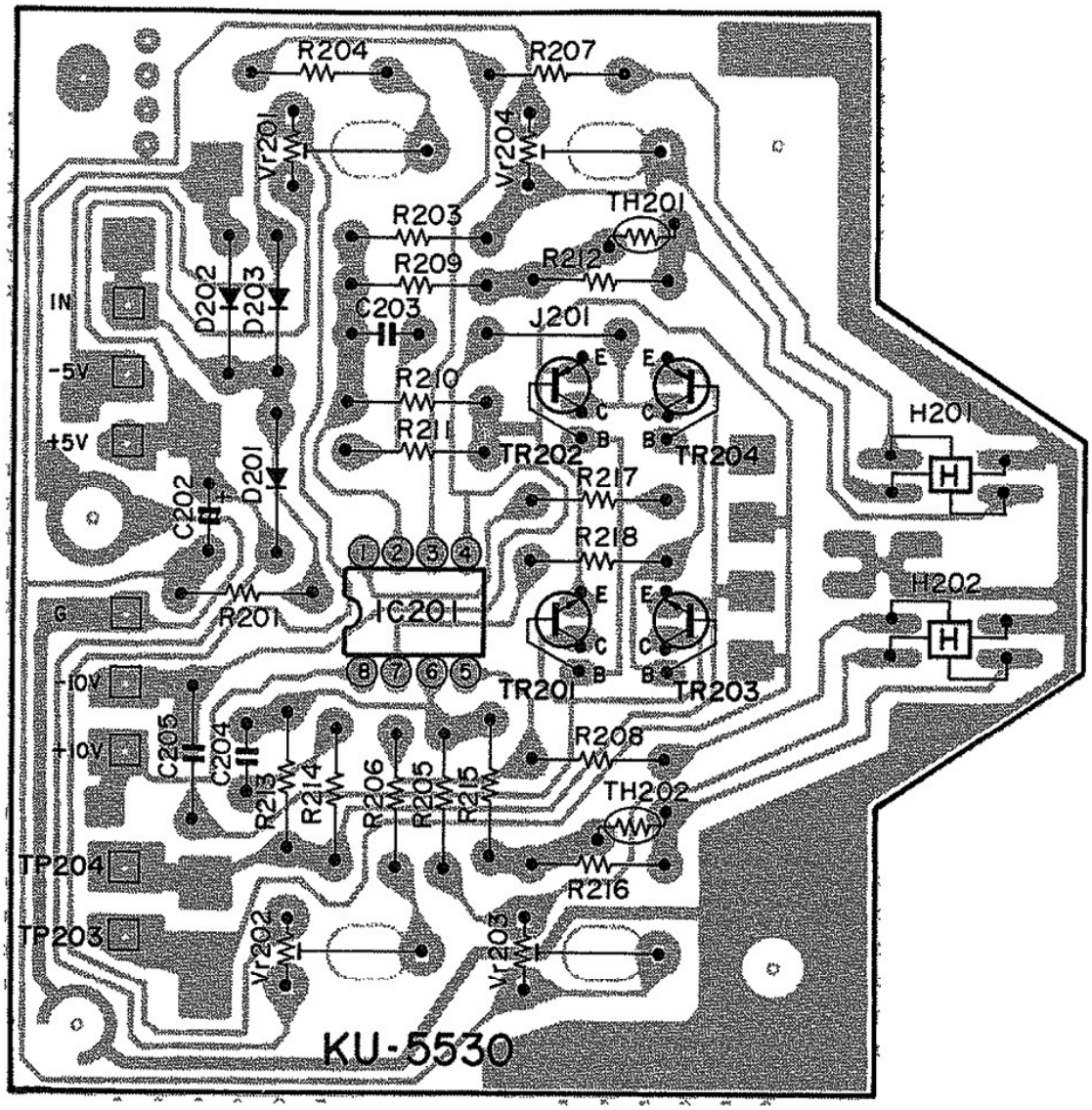
CONNECTIONS OF P.W. BOARD



P.W. BOARD OF KU-5520 SERVO CONTROL UNIT

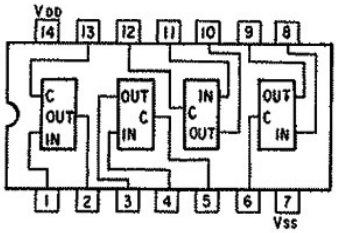


P.W. BOARD OF KU-5530 MOTOR DRIVE UNIT

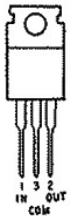


SEMICONDCTORS

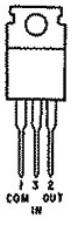
HD14066BP



μPC78M05H

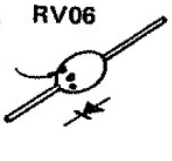


μPC7905H

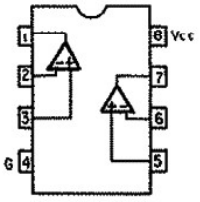


1S2076

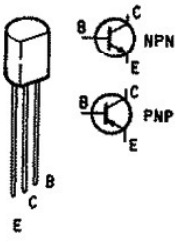
RV06



LA6358
M5218P
NJM4556



2SA933(S)
2SA966(Y)
2SB562(C)
2SC458(D)
2SC2236(Y)
2SD468(C)



DENON

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