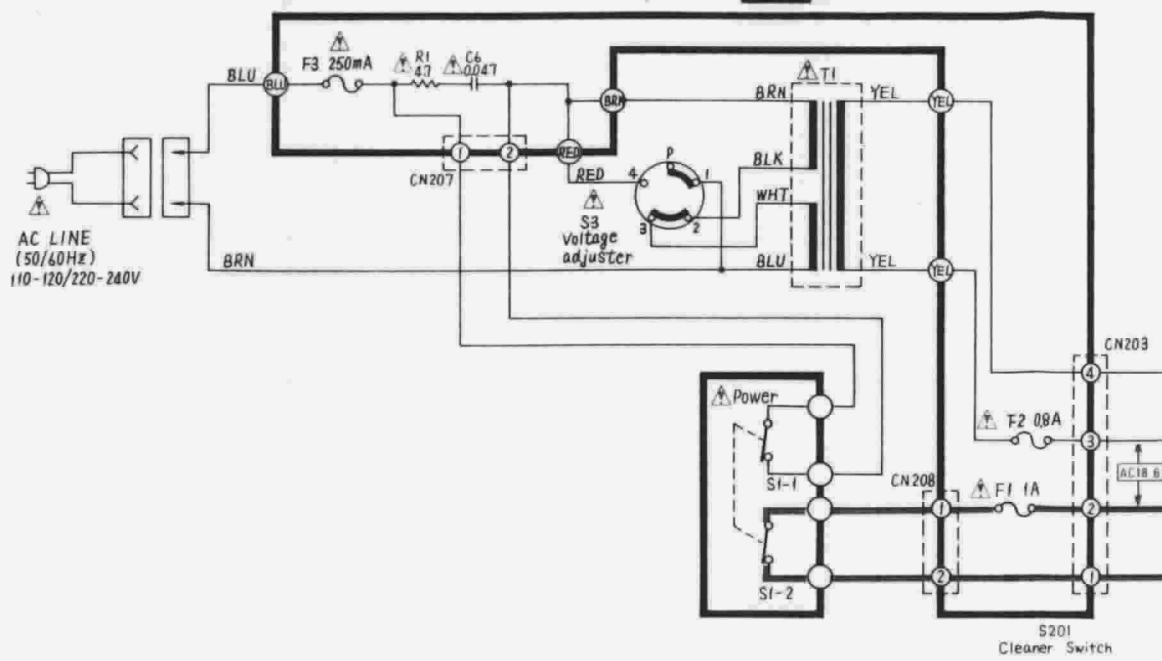


■ SCHEMATIC DIAGRAM (A) (This schematic diagram may be modified at any time with the development of

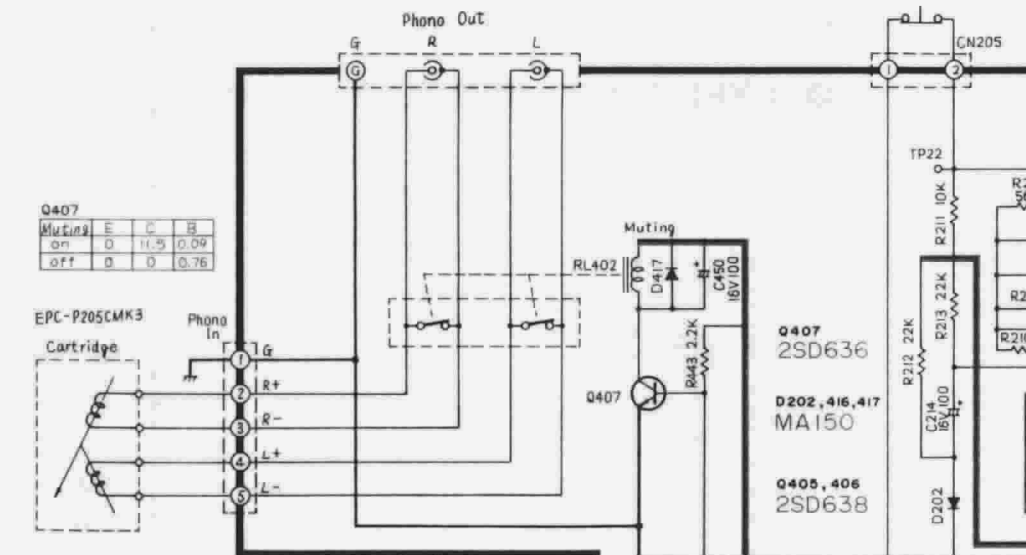
**C** Power source circuit



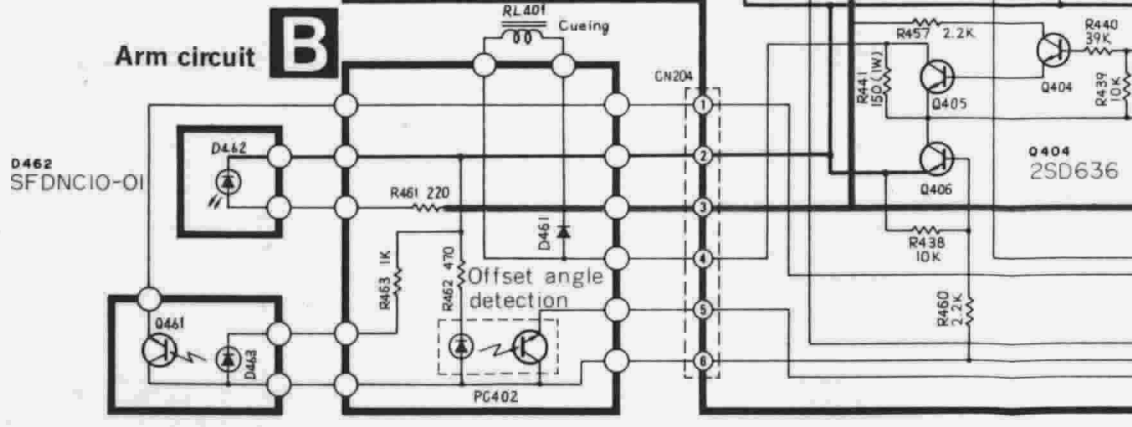
Q407

Muting	E	C	B
on	0	11.5	0.09
off	0	0	0.76

EPC-P205CMK3  
Cartridge



Arm circuit **B**



Q461	D463	PC402	D461
PN120S	LN62S	ON1108	MA150

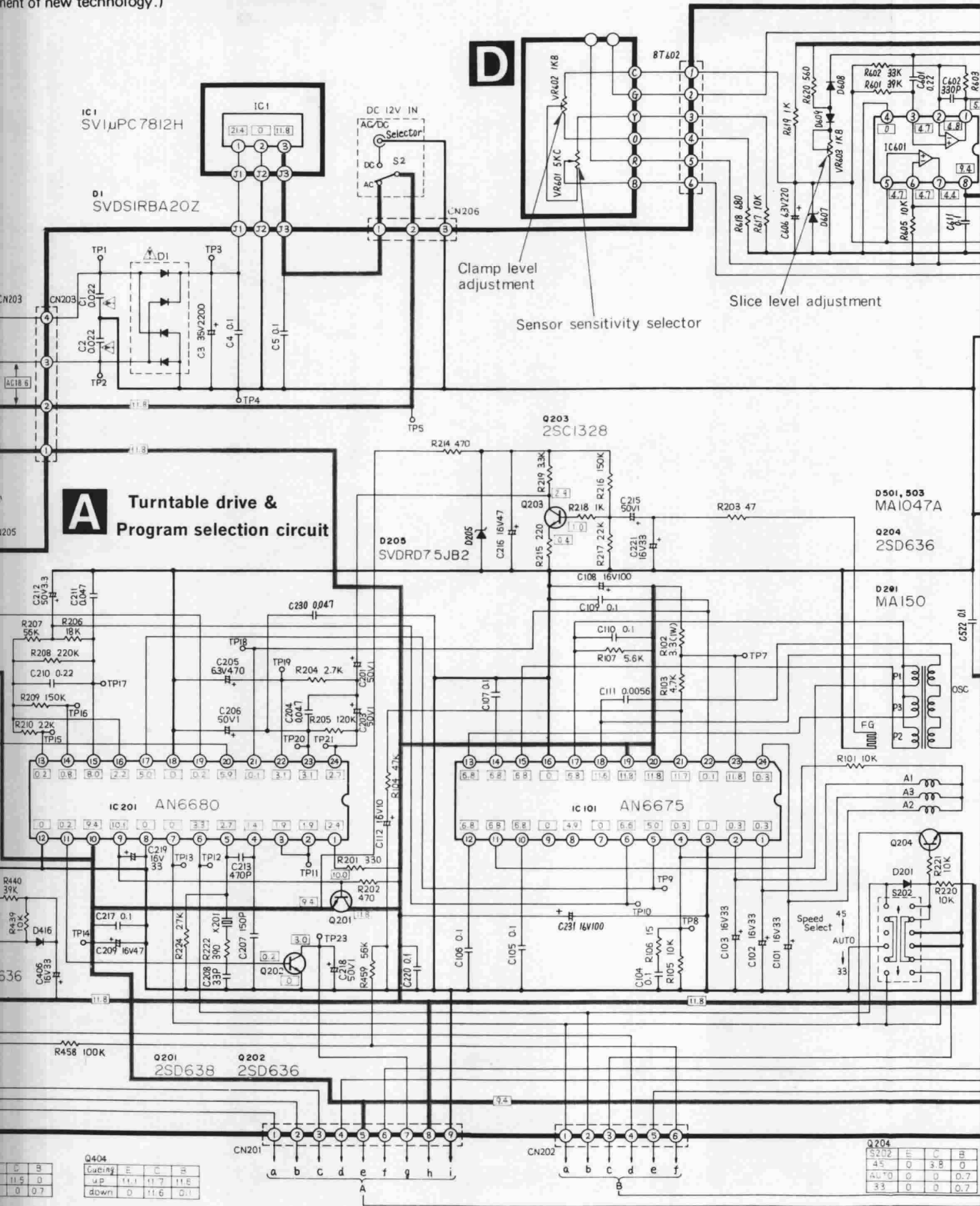
Q405

Cueing	E	C	B
up	11.5	11.5	11.1
down	0	8.5	0

Q406

Cueing	E	C	B
up	0	0	11.5
down	0	0	0

ment of new technology.)



**A** Turntable drive & Program selection circuit

**D**

IC1  
SV1μPC 7812H

D1  
SVDSIRBA20Z

Q203  
2SC1328

D205  
SVDRD7 5JB2

D501, 503  
MA1047A

Q204  
2SD636

D201  
MA150

IC201  
AN6680

IC101  
AN6675

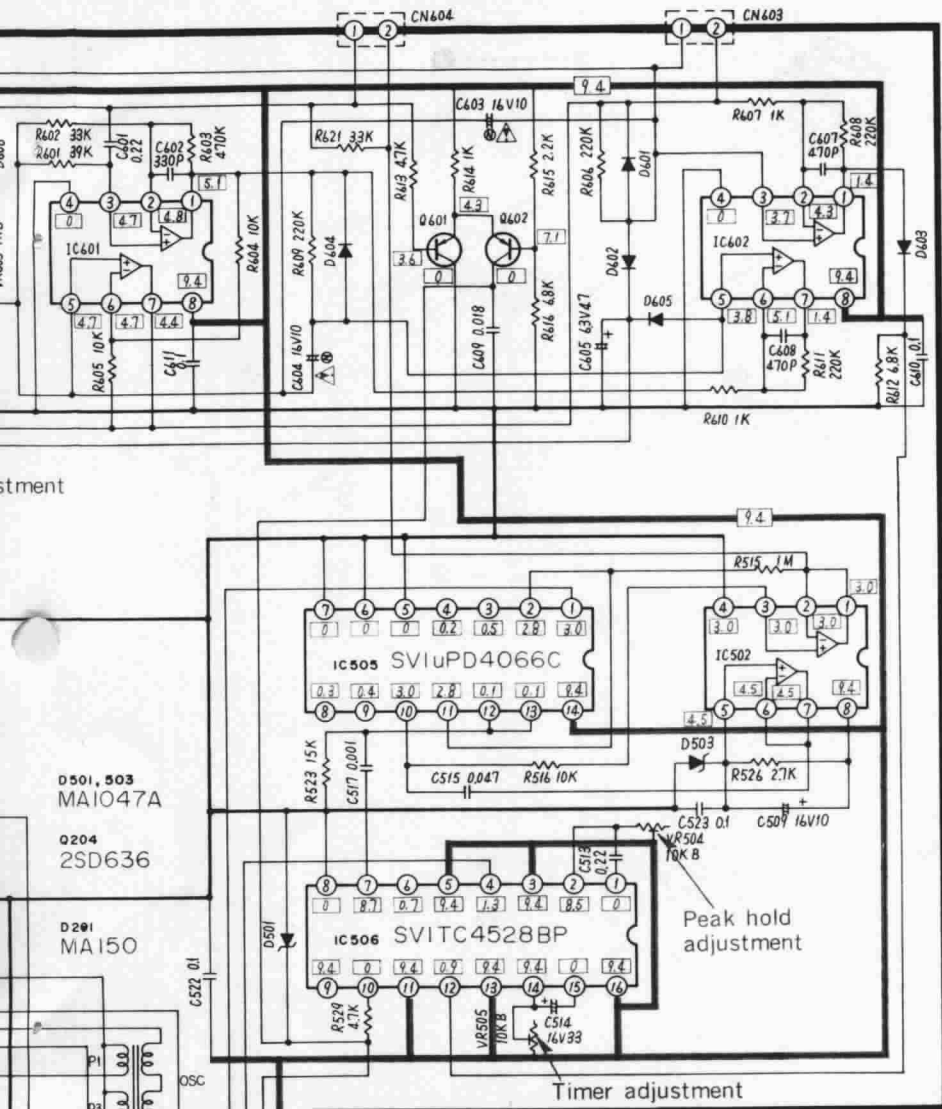
Q201  
2SD638

Q202  
2SD636

Q204

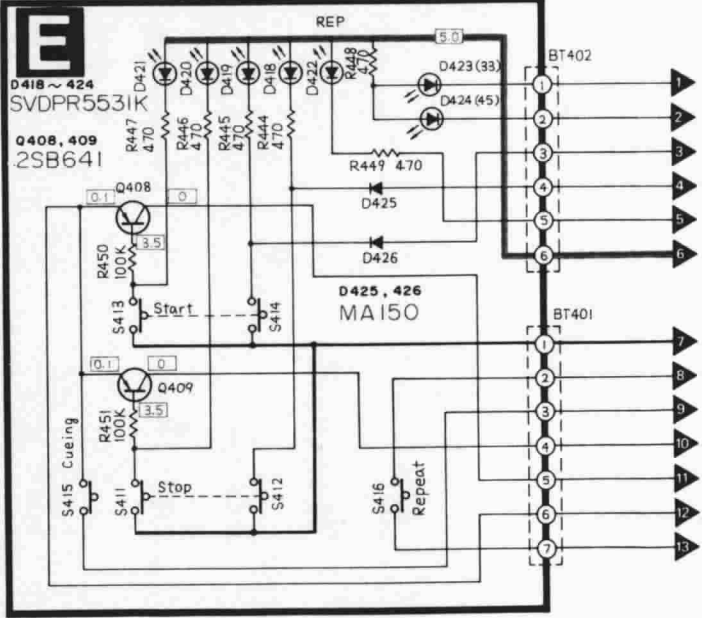
Q404		E	C	B
Waiting		11.1	11.7	11.E
up		0	0	0.7
down		0	11.6	0.1

Q204			
4.5	E	C	B
4.5	0	3.8	0
4.7	0	0	0.7
3.3	0	0	0.7



- IC601, 602  
AN6552
- Q601, 602  
2SB641
- D601 ~ 605, 608, 609  
MA150
- D607  
MA1047A
- IC502  
AN6552
- D503  
MA1047A

### Operation circuit

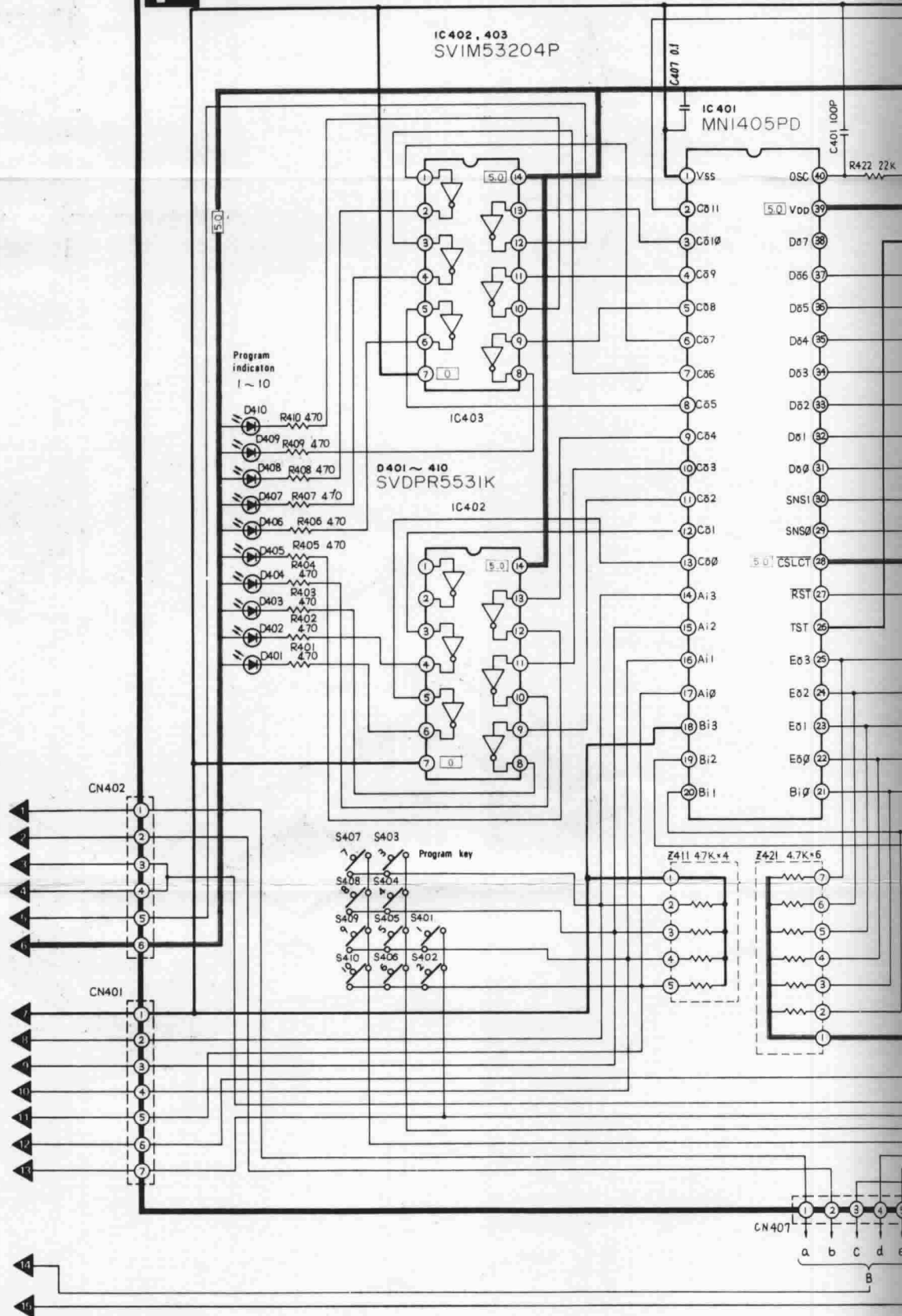


Q204	S202	E	C	B
45	0	3.8	0	0
AUTO	0	0	0.7	0
33	0	0	0.7	0

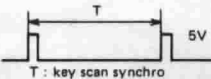
# SCHEMATIC DIAGRAM (B)

(This schematic diagram may be modified at any time with the development of r

## F Logic control circuit

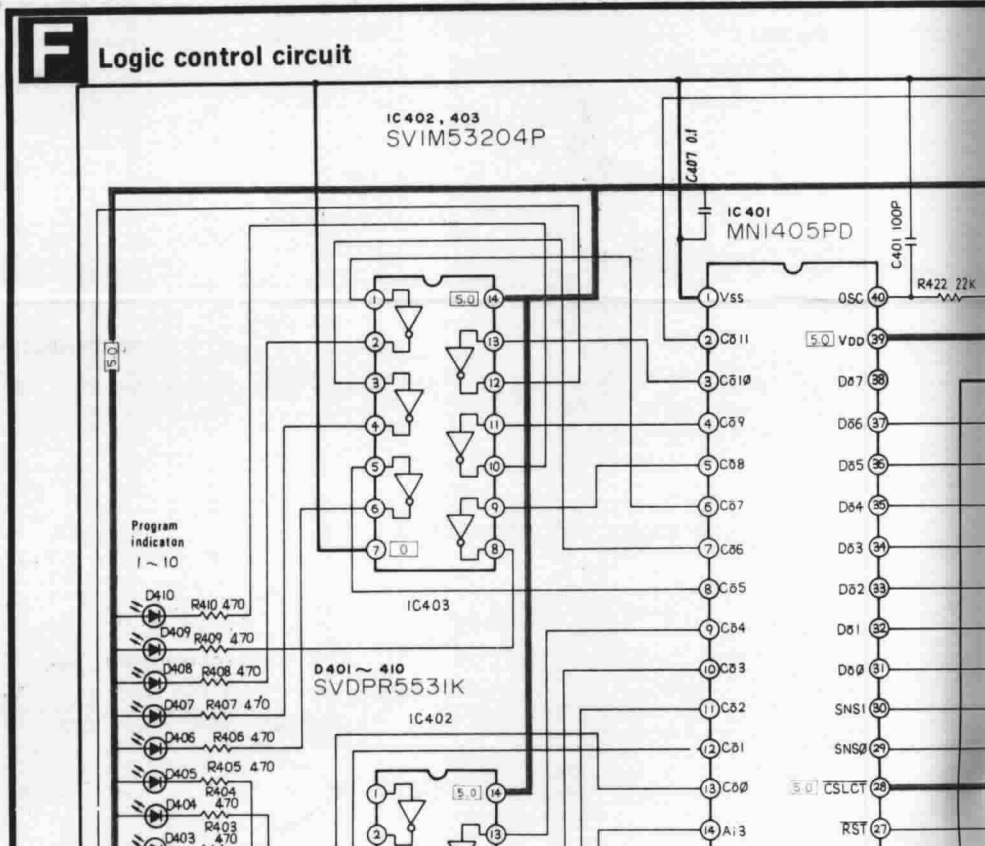


# DESCRIPTION OF EACH TERMINAL OF MN1405PD

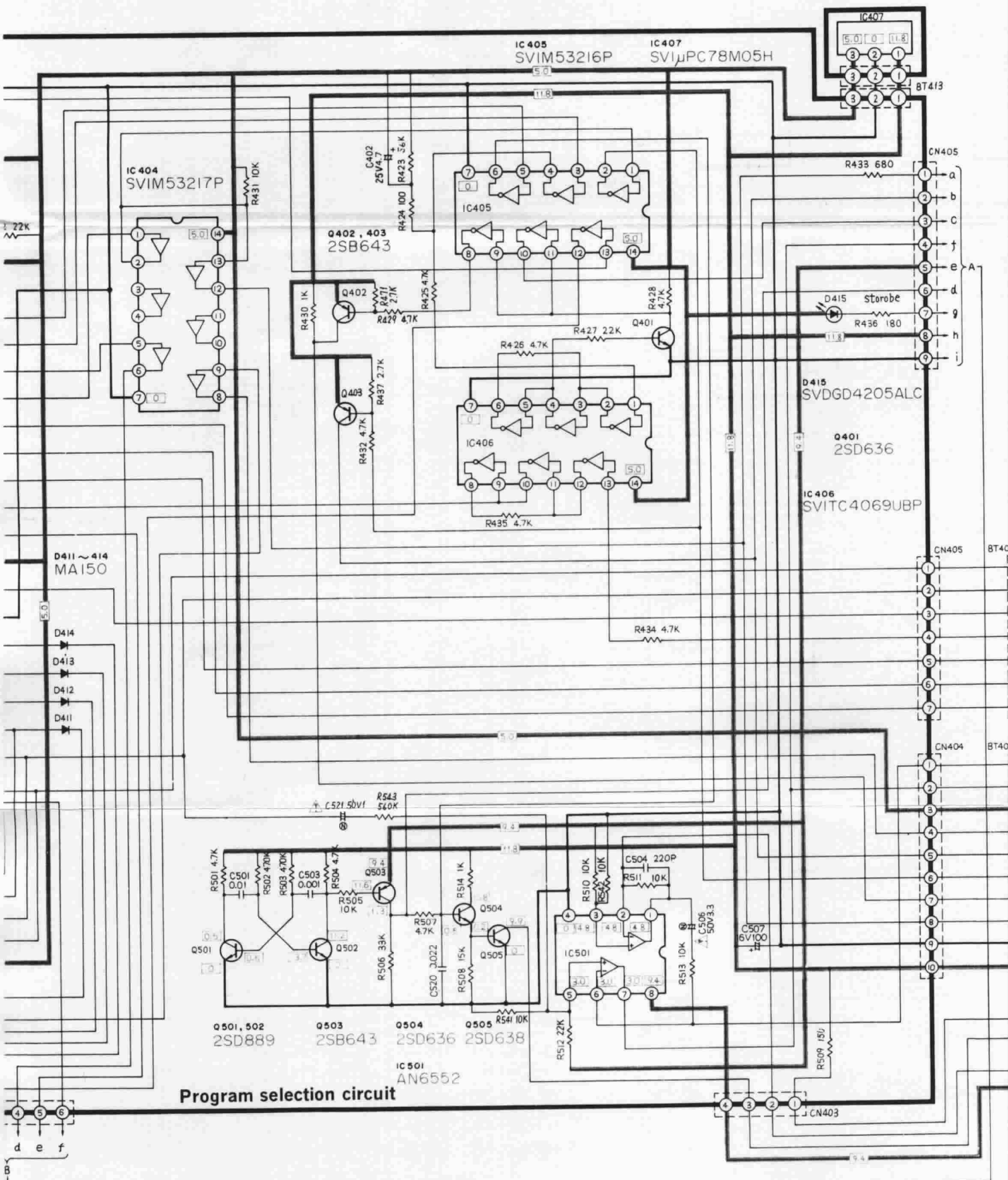
Terminal	Description	Remarks
① (Vss)	Ground terminal . . . . . 0V	
② (Co11)	Turntable speed select output terminal 33 1/3 r.p.m. . . . . "L" 45 r.p.m. . . . . "H"	When microcomputer is reset (power supply is "on" or upper cabinet is open), the level changes to "L".
③ (Co10)	Repeat display output terminal It is reversed each time the repeat key is pushed. Repeat LED ON . . . . . "H" Repeat LED OFF . . . . . "L"	If the upper cabinet is kept open, microcomputer is reset. Therefore, pushing the key does not reverse the output and the level remains "L".
④ (Co9) ⑬ (Co0)	Program LED display output terminal Each LED turns ON and OFF each time the program key is pushed. Program LED ON . . . . . "H" Program LED OFF . . . . . "L"	When tonearm is on the rest, pushing the key causes the output to reverse, but it depends on the mode during play.
⑭ (Ai3) ⑰ (Ai0)	Key scan input terminal In the key matrix of 4 x 4, "H" pulse is entered when the key is pushed. The pulses is "L" when the key is not pushed.	When input is applied, the pulse waveform is as shown below.  T somewhat varise depending on the mode, but it is about 1.2 ms when the arm is on the rest.
⑱ (Bi3)	Not used	
⑲ (Bi2)	Arm-down sensor input terminal Arm UP . . . . . "L" Arm DOWN . . . . . "H"	
⑳ (Bi1)	Cabinet opening/closing detection input terminal. Reset switch (S301) attached to the cabinet: Upper cabinet is open. . . . . "H" Upper cabinet is closed . . . . . "L"	

1 2 3 4 5

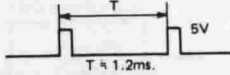
# SCHEMATIC DIAGRAM (B) (This schematic diagram may be modified at any time with the development of



t of new technology.)



Program selection circuit

Terminal	Description	Remarks
⑳ (Bi0)	Rest position detection input terminal. Limit switch (S302) on the rest is "on" when the tonearm is on the rest, and "off" when it isn't. Tonearm is on the rest . . . . . "L" Tonearm is not on the rest . . . . . "H"	
㉑ (Eo0) ㉒ (Eo3)	Key scan output terminal Pulse is applied to the key matrix of 4 x 4. The interval is about 1.2 ms on the rest. 	When the upper cabinet is open (S301. . . "off"), all is at "L" because there is no key scan output.
㉓ (TST)	Test terminal. . . . .Not used	
㉔ (RST)	Reset terminal The microcomputer is reset at "L" level, and is not reset at "H".	When power supply is "on" microcomputer is once reset, and after that, it is kept at "H".
㉕ (CSLCT)	Select terminal The level is set to "H" by the select terminal of the inside counter.	
㉖ (SNS0)	Blank detection input terminal When the blank is detected by the reflection type optical sensor for blank detection, the level changes to "H".	
㉗ (SNS1)	Position detection Pulse is delivered to this terminal from photo coupler (PC401) for position detection according to the movement of the arm. Pulse intervals { High speed: about 7 ms { Low speed: about 14 ms	

6

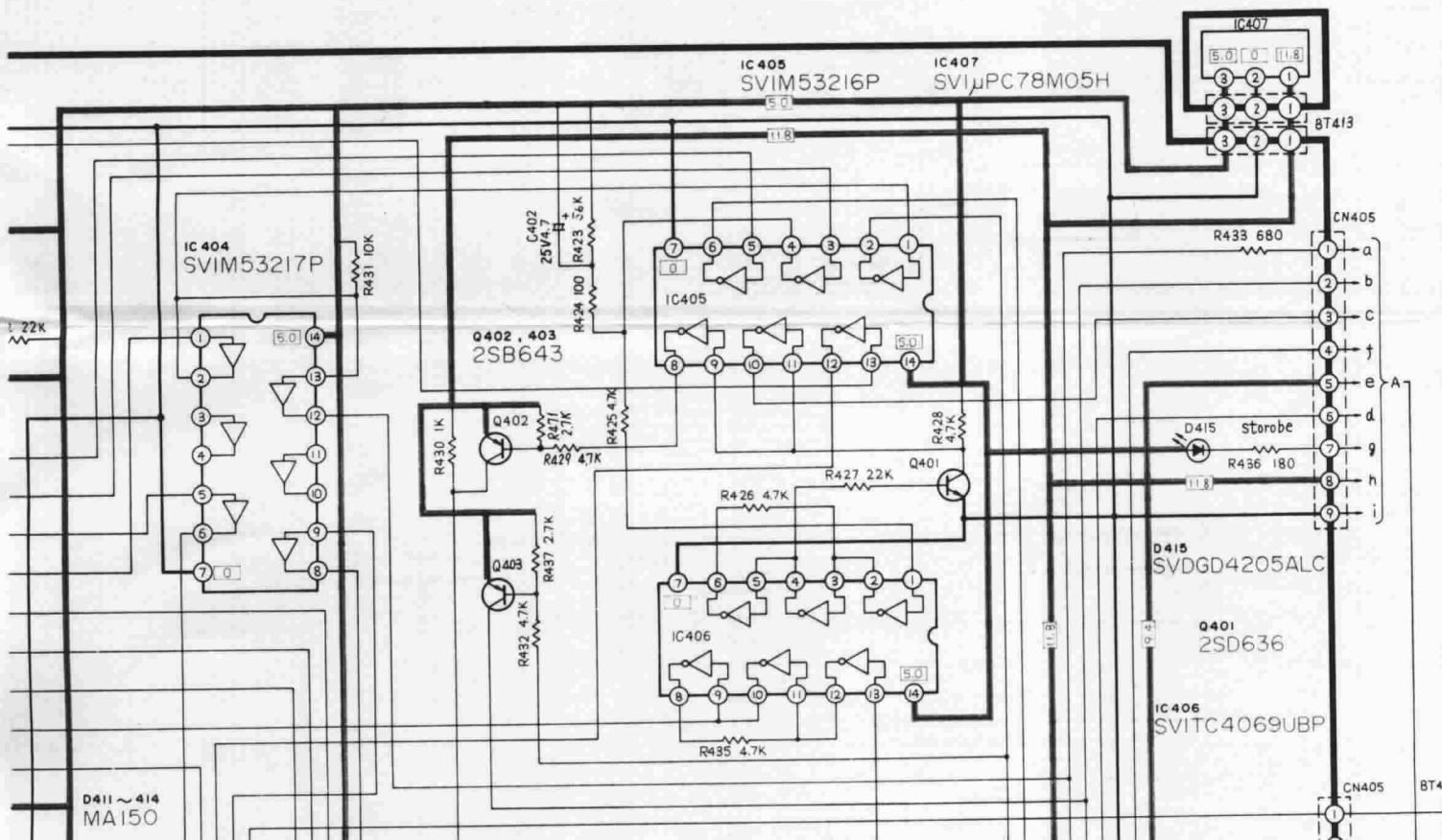
7

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9

10

t of new technology.)



Terminal	Description																																								
	<p>Arm drive control terminal The arm drive is controlled in the modes mentioned below.</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Terminal 34</th> <th>Terminal 33</th> <th>Terminal 32</th> <th>Terminal 31</th> </tr> </thead> <tbody> <tr> <td>Stop</td> <td>L</td> <td>L</td> <td>L</td> <td>L</td> </tr> <tr> <td>Forward (High)</td> <td>L</td> <td>H</td> <td>L</td> <td>L</td> </tr> <tr> <td>Reverse (High)</td> <td>L</td> <td>L</td> <td>H</td> <td>L</td> </tr> <tr> <td>Forward (Low)</td> <td>L</td> <td>H</td> <td>L</td> <td>H</td> </tr> <tr> <td>Reverse (Low)</td> <td>L</td> <td>L</td> <td>H</td> <td>H</td> </tr> <tr> <td>Cueing down</td> <td>H</td> <td>L</td> <td>L</td> <td>L</td> </tr> <tr> <td>Offset servo ON</td> <td>H</td> <td>H</td> <td>L</td> <td>L</td> </tr> </tbody> </table>	Mode	Terminal 34	Terminal 33	Terminal 32	Terminal 31	Stop	L	L	L	L	Forward (High)	L	H	L	L	Reverse (High)	L	L	H	L	Forward (Low)	L	H	L	H	Reverse (Low)	L	L	H	H	Cueing down	H	L	L	L	Offset servo ON	H	H	L	L
Mode	Terminal 34	Terminal 33	Terminal 32	Terminal 31																																					
Stop	L	L	L	L																																					
Forward (High)	L	H	L	L																																					
Reverse (High)	L	L	H	L																																					
Forward (Low)	L	H	L	H																																					
Reverse (Low)	L	L	H	H																																					
Cueing down	H	L	L	L																																					
Offset servo ON	H	H	L	L																																					
35 (Do4)	<p>Turntable start/stop select terminal Start ..... "H" Stop ..... "L"</p>																																								
36 (Do5)	<p>Muting control terminal "H" changes to "L" when the arm-down sensor input is "H" after the arm finishes cueing-down.</p>																																								
37 (Co6)	<p>Band detection sensor control terminal. The sensor is in operation when the arm is cueing-up, but it is stopped when the arm is cueing-down. Cueing-up ..... "L" Cueing-down ..... "H"</p>																																								
38 (Do7)	Not used																																								
39 (VDD)	Power supply terminal ..... +5V																																								
40 (OSC)	<p>Oscillation terminal In case of C401 and R442, the clock of micro-computer is set by constant.</p>																																								

Remarks
<p>Timing chart Down screw output Terminal 36</p>
<p>When probe is connected to this terminal, the oscillation synchro changes making it impossible to measure correct values. Clock must be measured from the synchro of the key scan output terminal.</p>

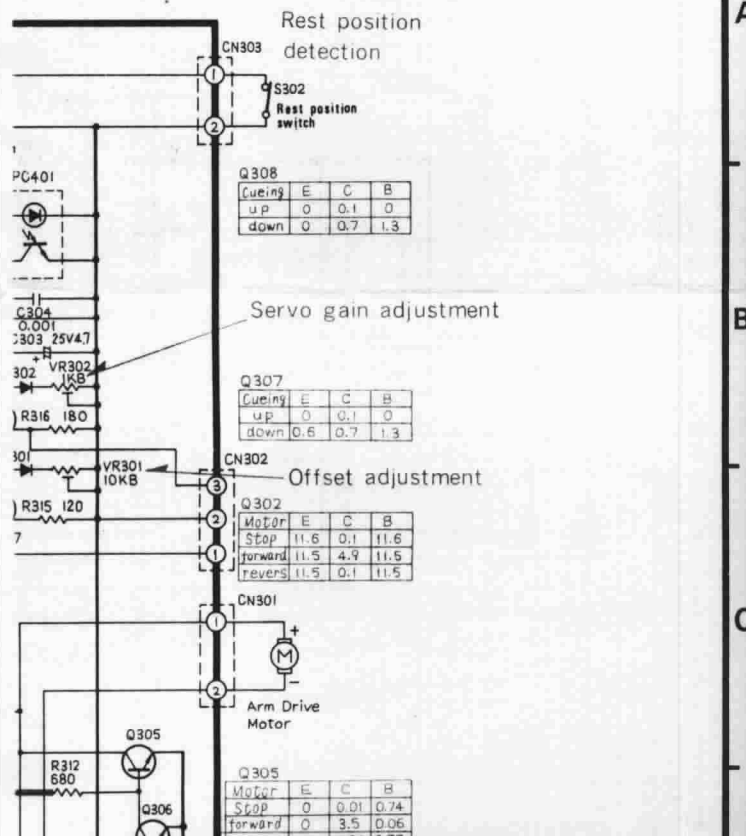
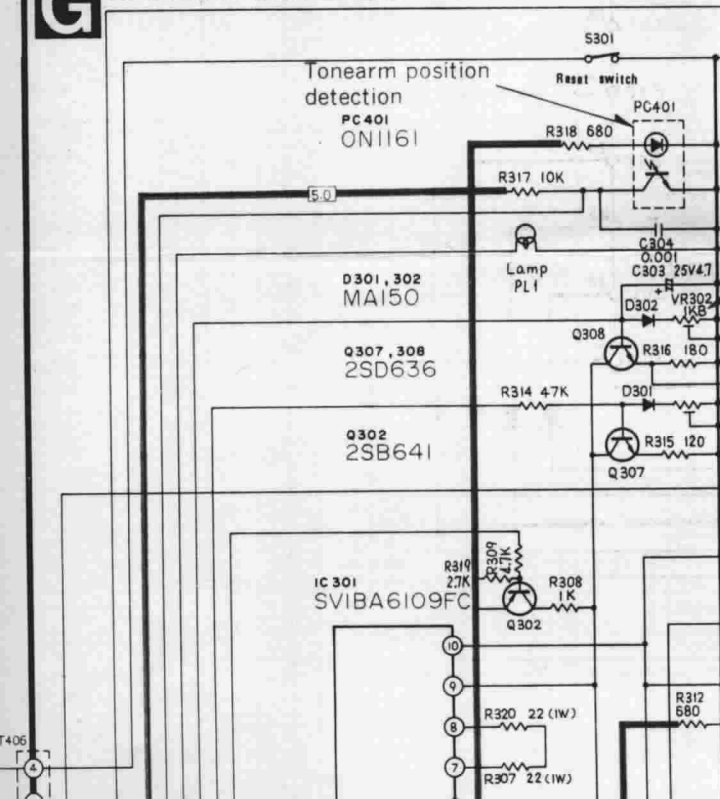
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14

### Arm motor drive circuit





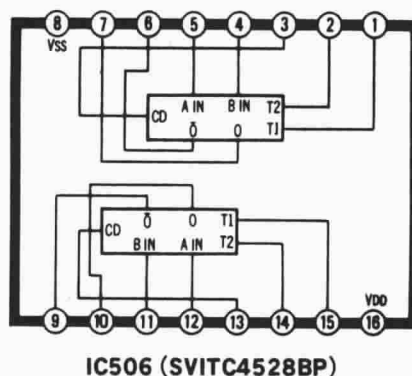
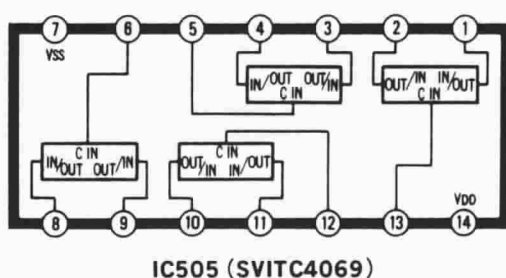
Notes:

1. **S1-1** : Power switch in "on" position. (Primary side)
2. **S1-2** : Power switch in "on" position. (Secondary side)
3. **S2** : AC/DC select switch in "AC" position.  
(AC/DC input terminal built-in switch – AC priority)
4. **S3** : Voltage adjuster switch in "220V – 240V" position.  
110V – 120V → 220V – 240V
5. **S201** : Turntable drive (cleaner) switch in "off" position.
6. **S202** : Speed select switch in "auto" position. (33 → auto → 45)
7. **S301** : Reset switch in "on" position.
8. **S302** : Rest detecting switch in "on" position.
9. **S401 ~ 410** : Program switch (Program key 1 ~ 10) in "off" position.  
(not push condition)
10. **S411** : Stop/clear switch (▶▶) in "off" position. (not push condition)
11. **S412** : Fast rewind switch (▶▶) in "off" position. (not push condition)
12. **S413** : Start switch (◀◀) in "off" position. (not push condition)
13. **S414** : Fast forward switch (◀◀) in "off" position. (not push condition)
14. **S415** : Cueing switch in "off" position. (not push condition)
15. **S416** : Repeat switch in "off" position. (not push condition)
16. The value in □ is the reference voltage at stop of the turntable, measured by DC electronic circuit tester (high-impedance) on the basis of chassis.  
Therefore, the measured value may include some error depending on the internal impedance of the DC circuit tester and other conditions.
17. ■ + ⊕ voltage line.
18. Important safety Notice:  
Components identified by ⚠ mark have special characteristics important for safety.  
When replacing any of these components, use only manufacturer's specified parts.

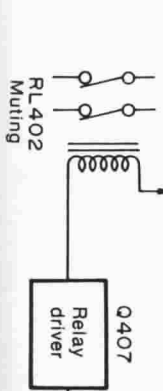
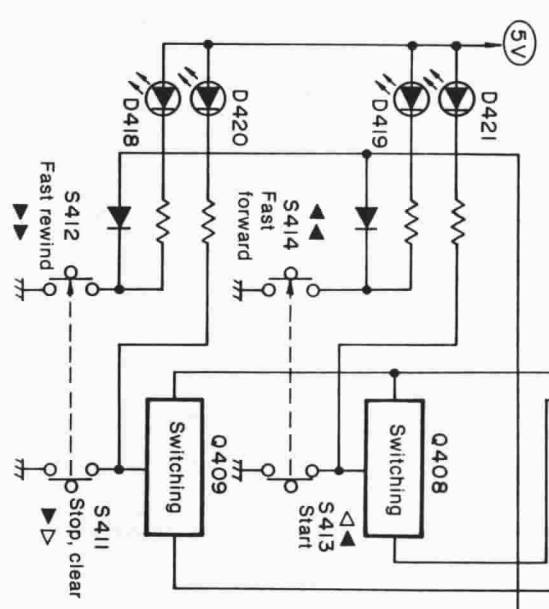
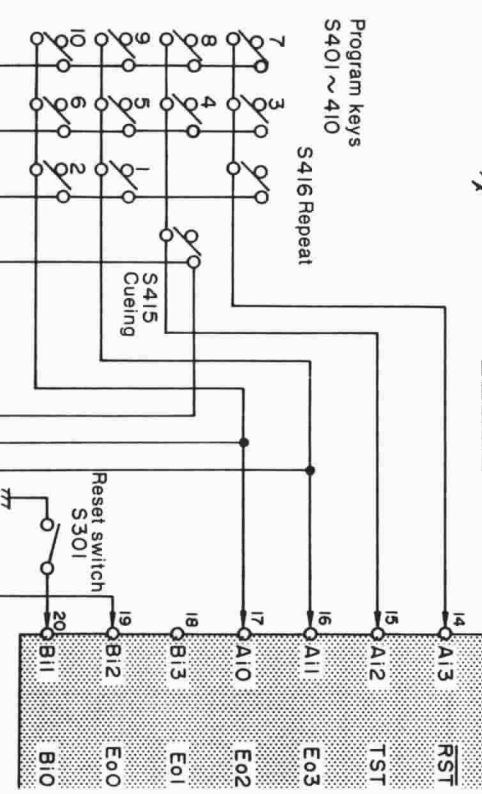
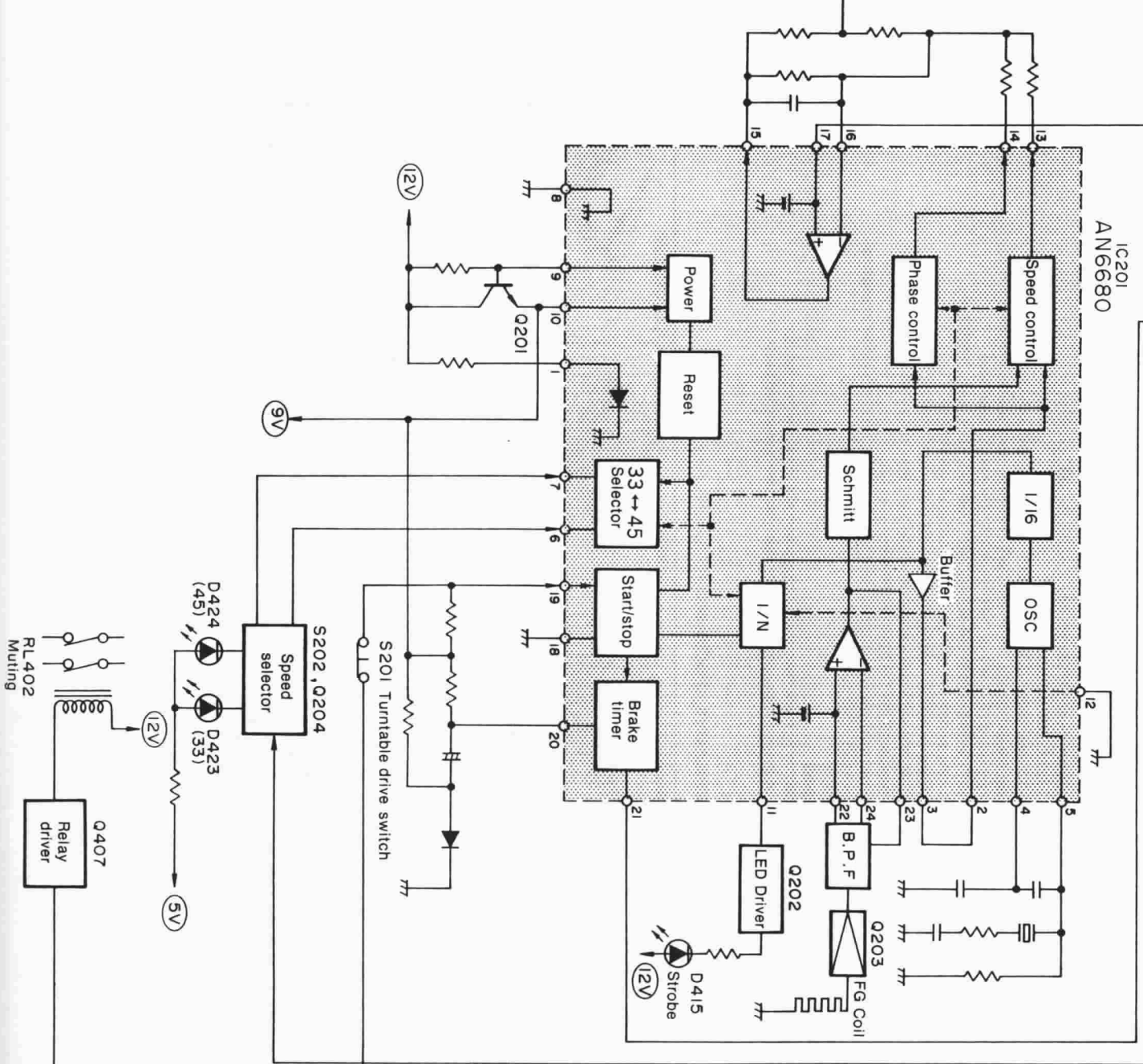
● Terminal guide of transistors, diodes and IC's

<p><b>SVIUPC7812H</b> <b>SVIUPC78M05H</b></p>	<p><b>AN6675</b></p>	<p><b>AN6680</b></p>	<p><b>SVITC4528BP</b></p>	
<p><b>SVITC4069UBP</b> <b>SVIM53204P</b> <b>SVIM53216P</b> <b>SVIUPD4066C</b> <b>SVIM53217P</b></p>	<p><b>AN6553</b></p>	<p><b>MN1405PD</b></p>		
<p><b>SVIBA6109FC</b></p>	<p><b>2SB641, 2SD636</b> <b>2SB643, 2SD638</b></p>	<p><b>2SC1328</b></p>	<p><b>2SD889</b></p>	<p><b>SVDP5531K</b></p>
<p><b>SVDGD4205ALC</b></p>	<p><b>ON1108</b></p>	<p><b>ON1161</b></p>		

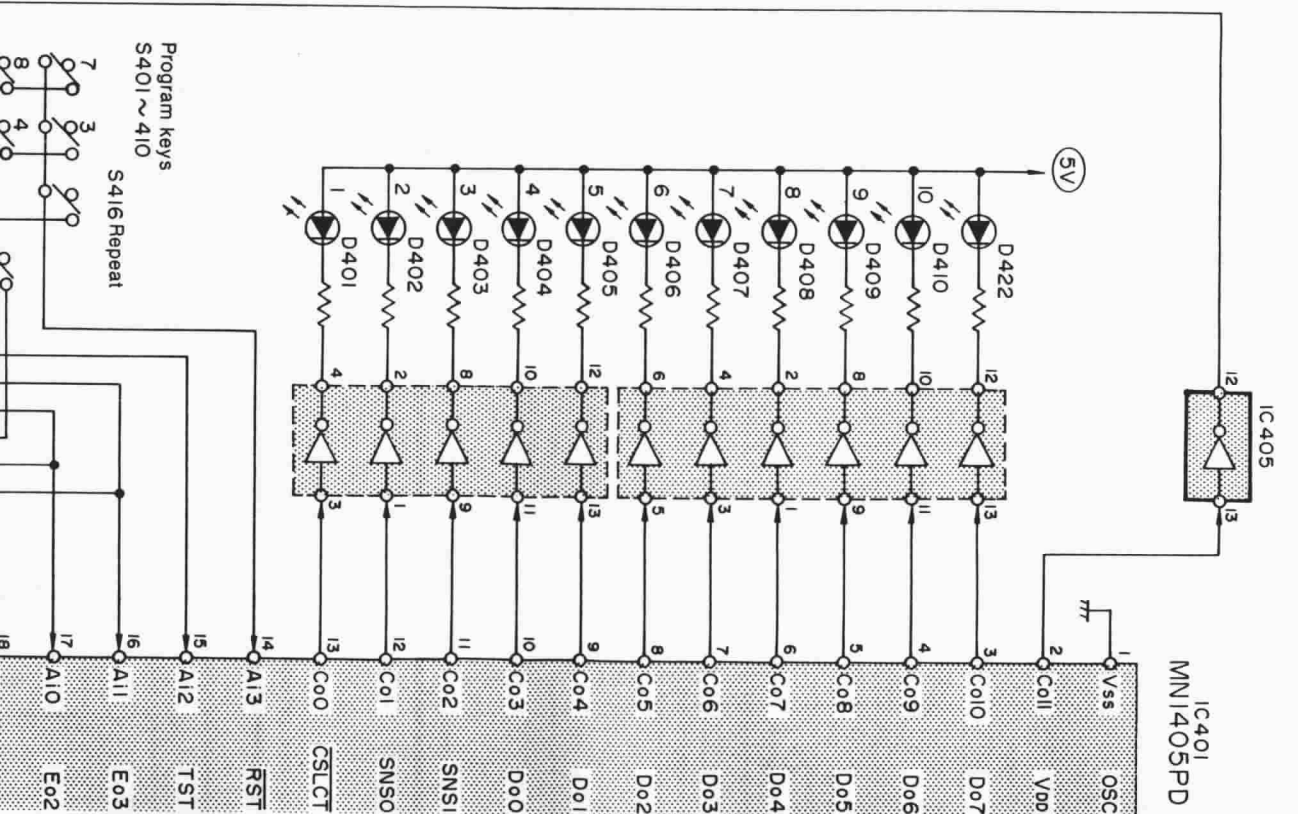
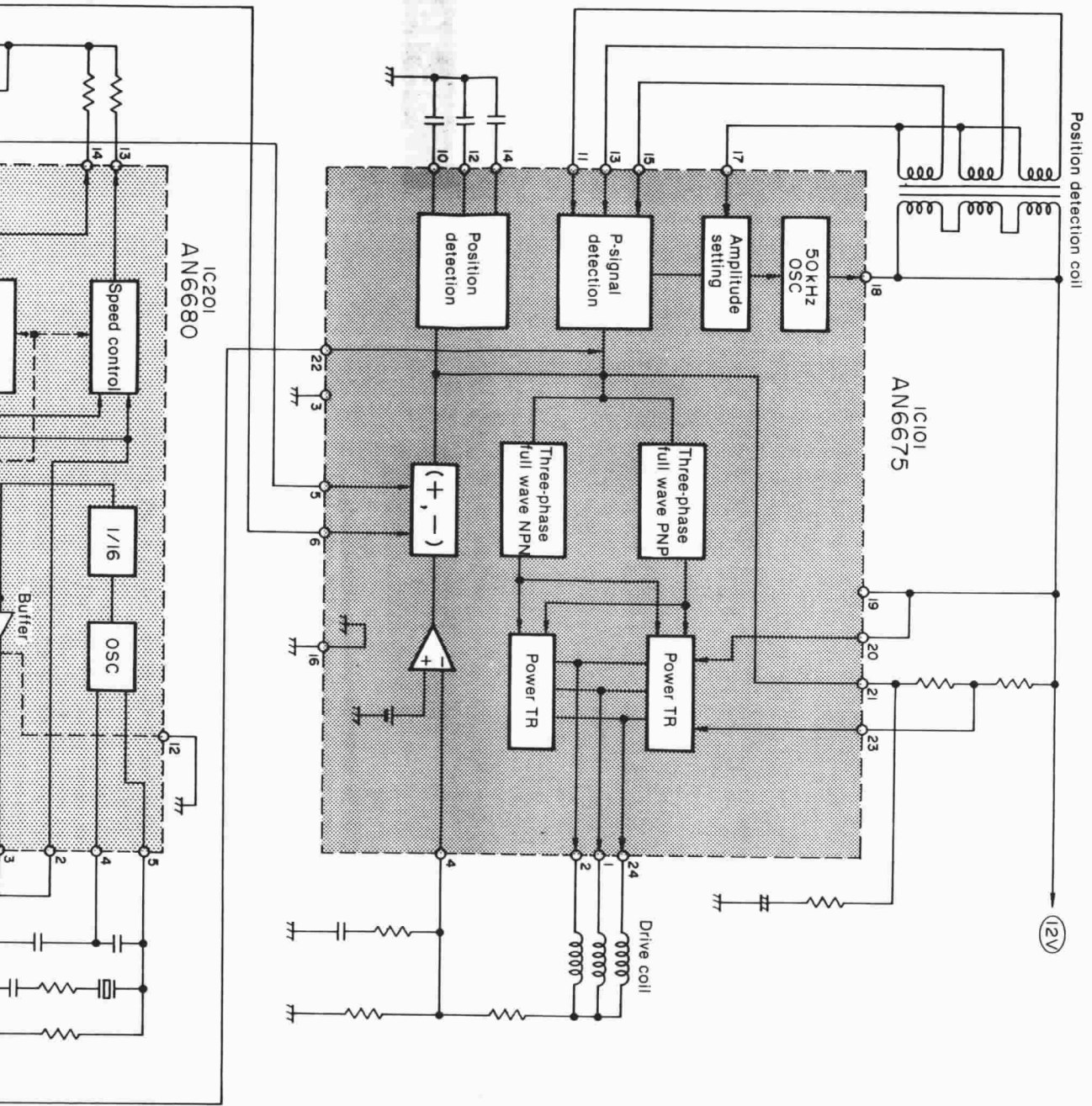
● Block diagram of IC's

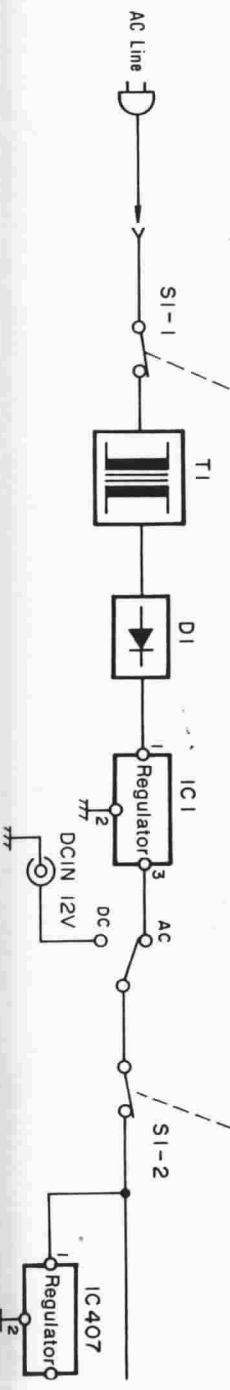
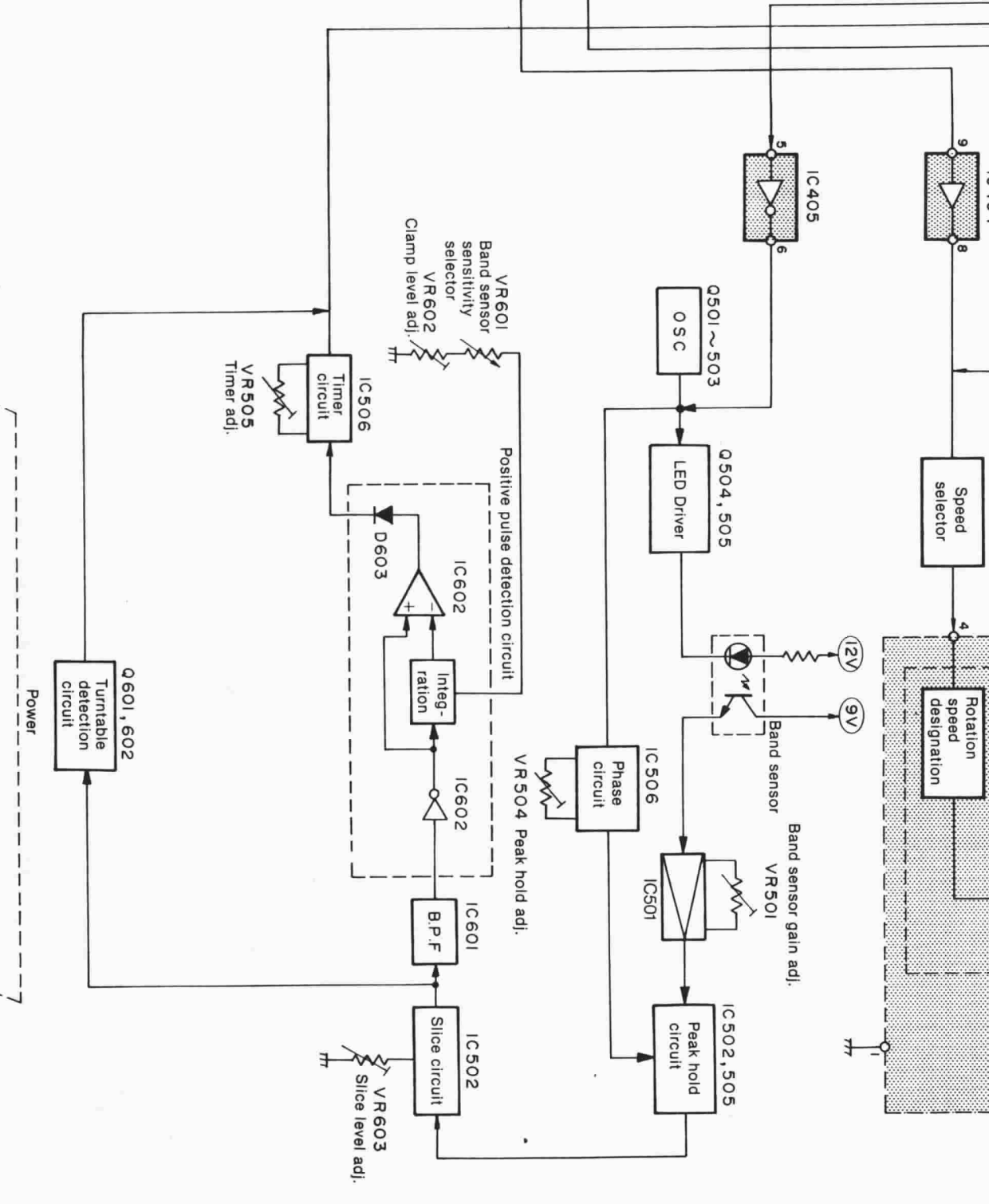
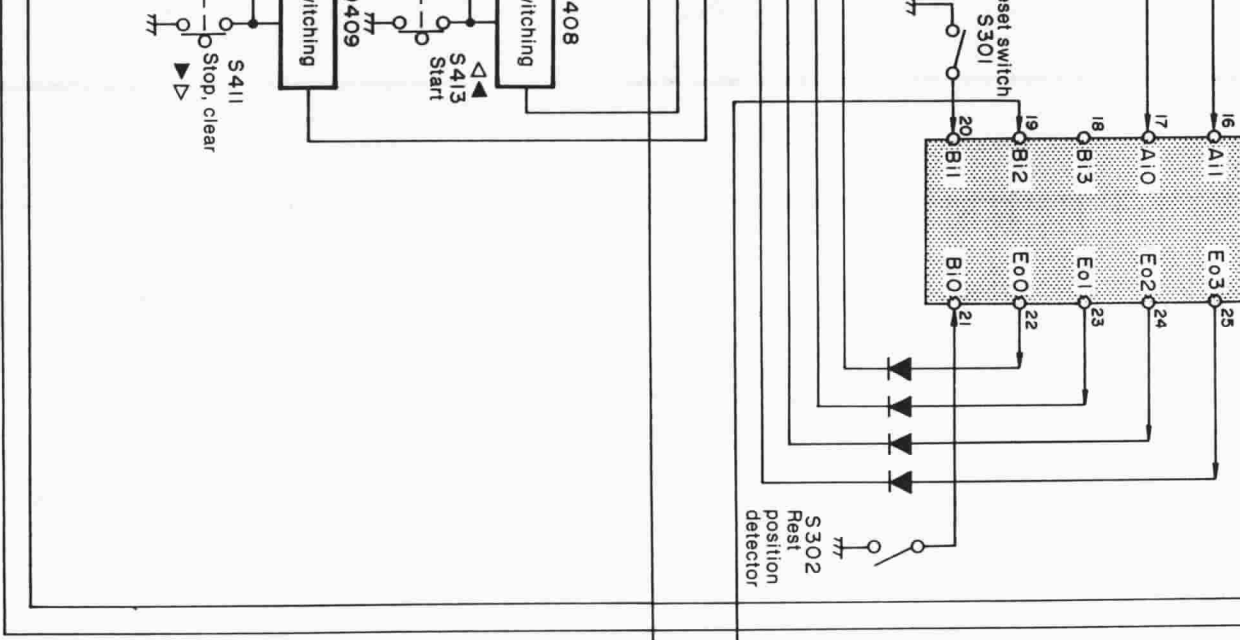


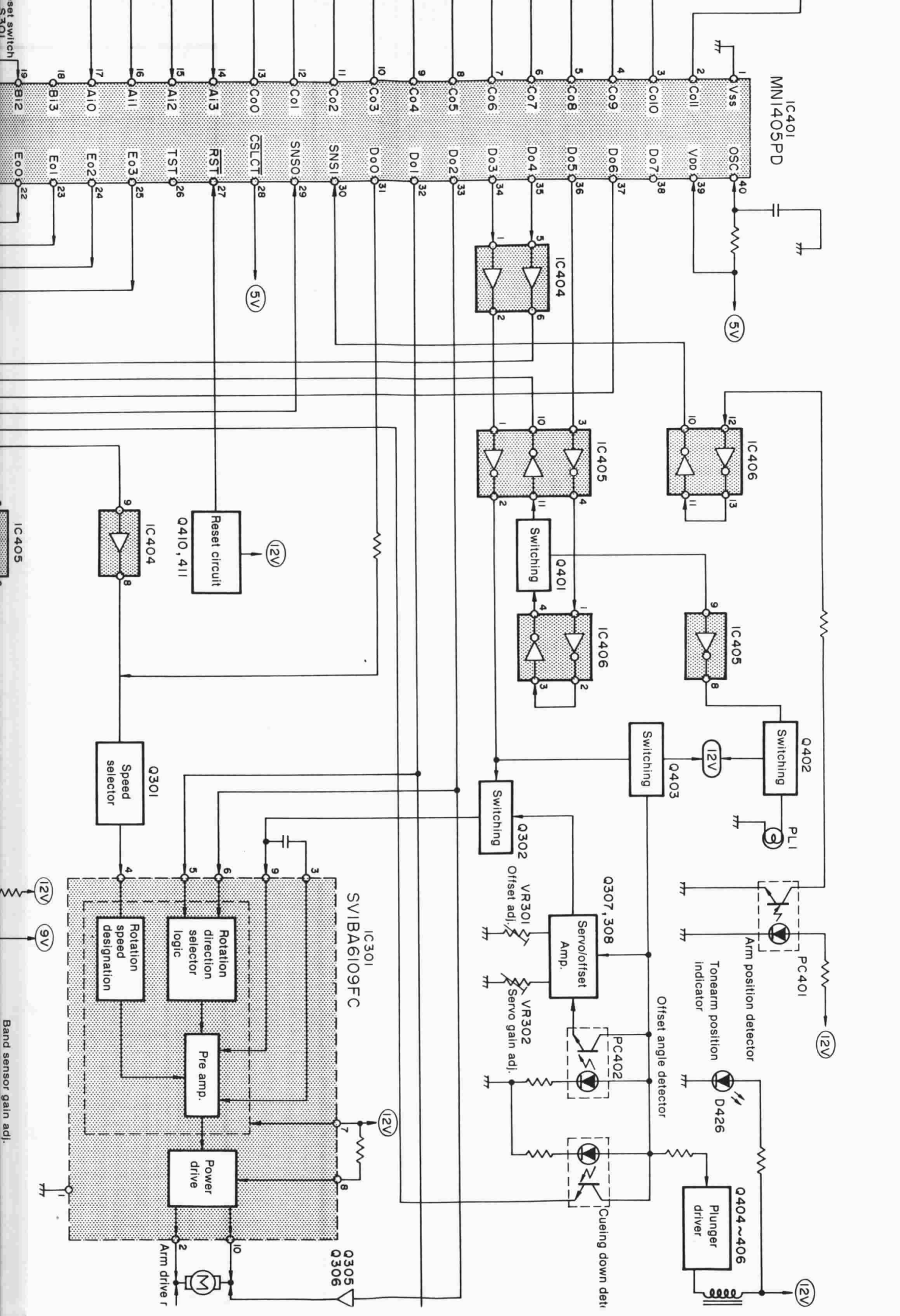
IC201  
AN6680



# ■ BLOCK DIAGRAM

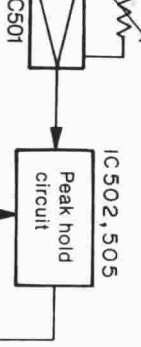




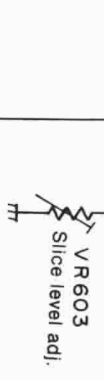
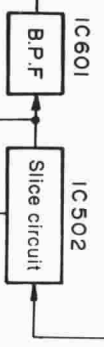


sensor gain adj.

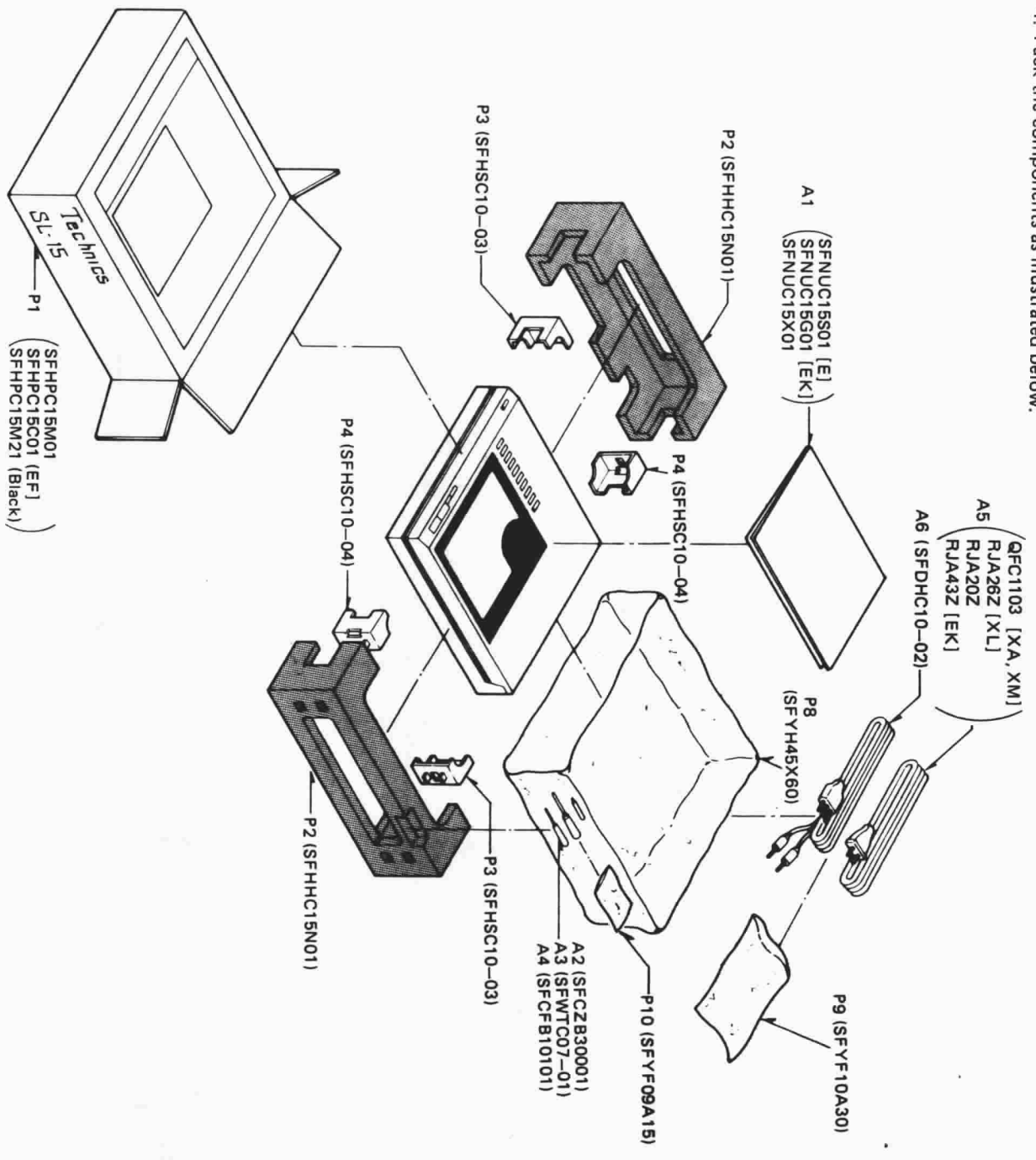
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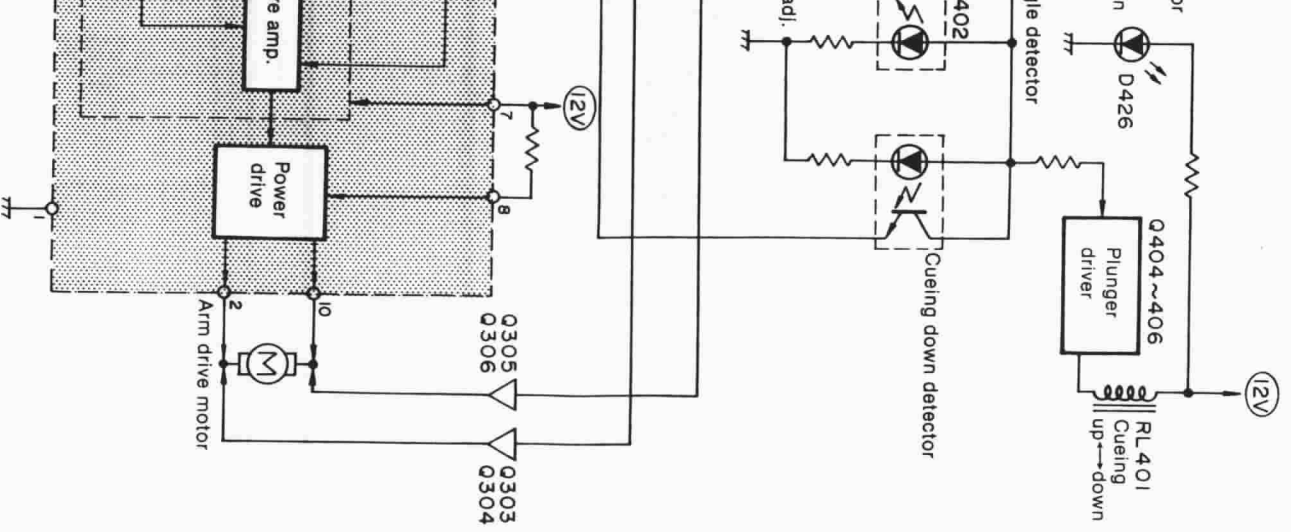


id adj.



4. Pack the components as illustrated below.

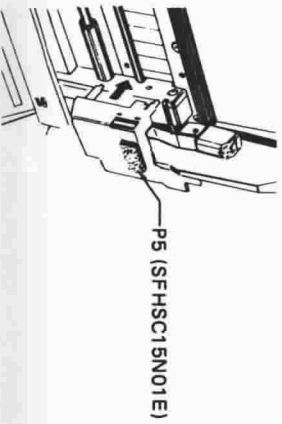




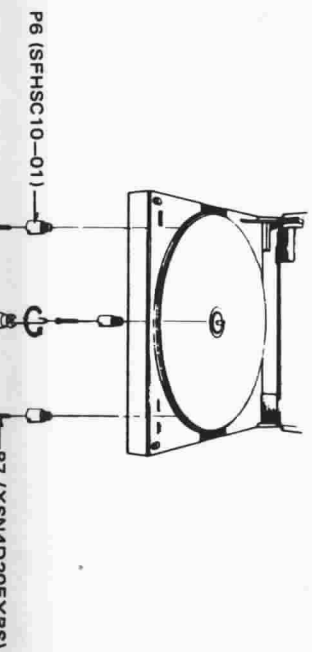
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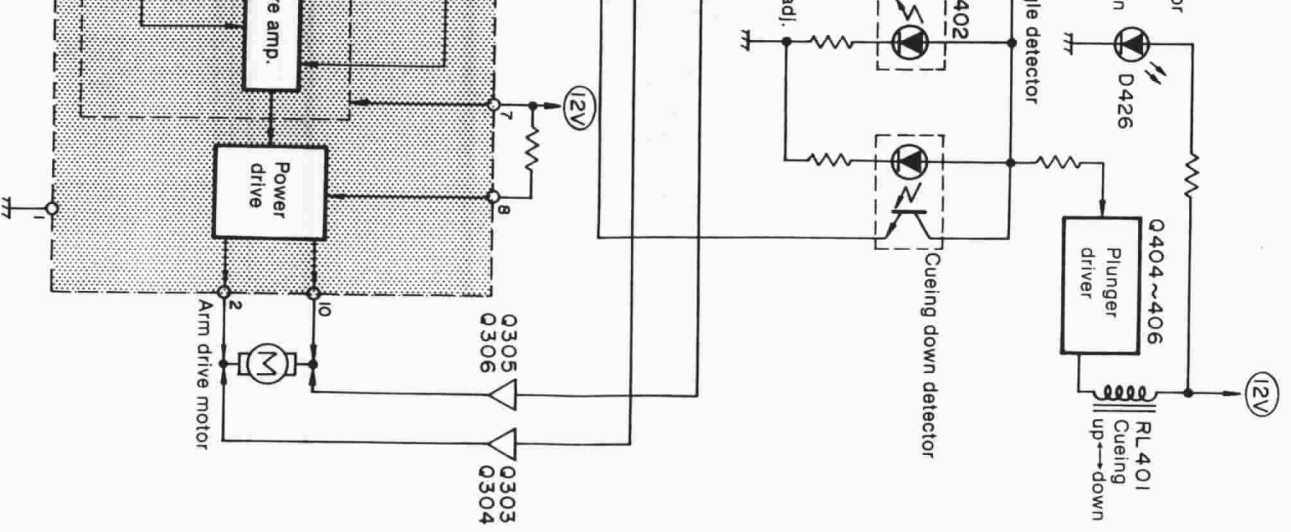
## PACKINGS

1. Make sure the tonearm is in the rest position (the outermost periphery of turntable).
2. Attach the spacer for tonearm protection. (Do not lock the arm.)



3. To secure the turntable, adjust the positions of the 3 screw-holes provided in the back of the player body by slowly rotating the turntable.

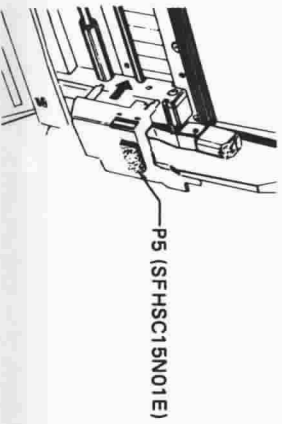




# SL-15

## PACKINGS

1. Make sure the tonearm is in the rest position (the outermost periphery of turntable).
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