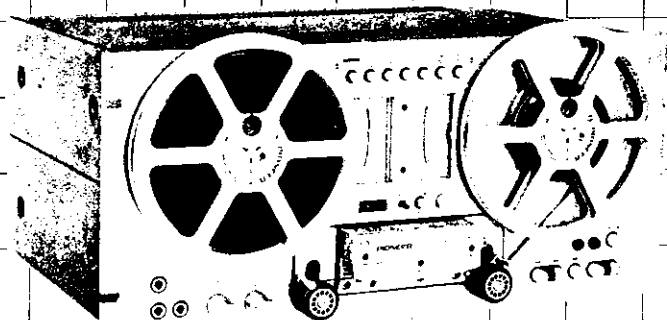


3-MOTOR 4-HEAD  
TAPE DECK

# RT-707

OPERATING INSTRUCTIONS

KCU



## IMPORTANT NOTICE

The serial number for this equipment is located on the rear panel. Please write this serial number on your enclosed warranty card and keep in a secure area. This is for your security.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD,  
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR  
MOISTURE.

 PIONEER®

# SPECIFICATIONS

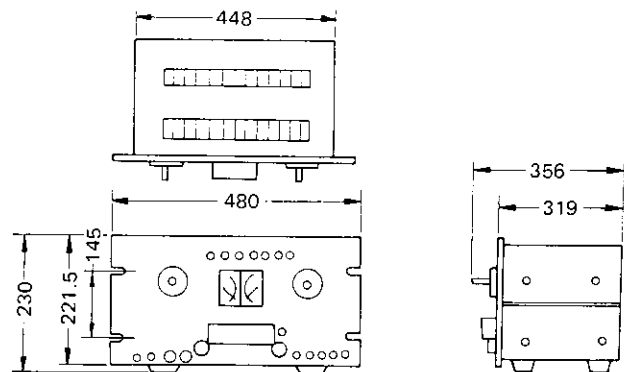
Type . . . . .	4-track, 2-channel stereo tape deck (Recording, playback with reverse playback)
Operation system . . . . .	Solenoid drive, Pushbutton direct change system, Timer can be set for recording and playback.
Heads . . . . .	Recording Head ; 1 Erase Heads ; 1 Forward playback Head ; 1 Reverse playback Head ; 1
Motors . . . . .	Capstan drive motor ; 1 (FG-system, AC servo, direct drive) Reel base drive motors ; 2 (6-pole inner rotor induction type)
Acceptable Reel Size . . . . .	7in (17cm)
Tape Speed . . . . .	19cm/s (7-1/2ips), 9.5cm/s (3-3/4ips) ±0.5%
Fast Forward/Rewind Times . . . . .	Less than 100 sec. with 7-inch reel and 370m tape
Wow and Flutter . . . . .	Less than 0.05% WRMS (19cm/s) Less than 0.08% WRMS (9.5cm/s)
Signal-to-Noise Ratio . . . . .	More than 58dB
Total Harmonic Distortion . . . . .	Less than 1% (19cm/s)
Frequency Response	
19cm/s . . . . .	20Hz to 28,000Hz (30Hz to 24,000Hz ±3dB)
9.5cm/s . . . . .	20Hz to 20,000Hz (30Hz to 16,000Hz ±3dB)
Crosstalk . . . . .	More than 50dB
Channel Separation . . . . .	More than 50dB
Erasure Rate . . . . .	More than 70dB
Recording Bias Frequency . . . . .	125kHz
Equalization . . . . .	NAB Standards
Inputs (Sensitivity/Maximum allowable level/Input impedance)	
MIC; 0.25mV/125mV/27kΩ, 6mm diam. jacks (suitable microphone, 250Ω to 30kΩ)	
LINE; 50mV/25V/100kΩ, DIN; 16mV/8V/1.3kΩ, DIN standards	
Outputs (Reference level/Maximum level/Load impedance)	
LINE; 450mV/700mV/50kΩ, DIN; 450mV/700mV/50kΩ, DIN standards	
HEADPHONES; 70mV/8Ω, 6mm diam. jack	
Semiconductors . . . . .	67 transistors (4 FET's), 5 IC's, 47 diodes (1 thyristor, 2 LED's, 4 Zener diodes, 2 varistors, )
Accessory Functions	
• Pitch control (±6% of rated tape speed)	
• Auto reverse playback (with sensing tape: manual reverse is possible)	
• Auto repeat (counter-interlocked)	
• Recording mode switches (L, R independent)	
• Tape selectors: BIAS (STD/LH); EQ (STD/LH)	
• MIC/LINE mixing	
• Output volume controls	
• Pause indicator lamp	
Power Requirements . . . . .	AC 120V 60Hz
Power Consumption . . . . .	120 watts, Max.
AC Outlets . . . . .	Unswitched (300W max.) x 1
Dimensions . . . . .	480(W) x 230(H) x 356(D)mm 18-29/32 x 9-1/16 x 14in
Weight . . . . .	Without package; 20.0kg 44lb 1oz With package; 23.5kg 51lb 13oz

- Accessories . . . . .
- 7in metal reel (Pioneer PR-85) x 1
  - Connecting cord with pin plugs x 2
  - Head cleaning kit x 1
  - Sensing tape x 1
  - Splicing tape x 1
  - Operating instructions x 1

**NOTE:**

*Specifications and the design subject to possible modification without notice due to improvements.*

## Dimensions



unit = mm

## Test Conditions:

1. Reference tape: Scotch #206
2. Reference recording level: meter 0dB level (NAB standard reference level)
3. Reference signal: 1,000Hz
4. Wow & Flutter: at 3,000Hz weighted RMS
5. Frequency response: measured at -20dB level (19cm/s)
6. Signal-to-Noise ratio: measured at +6dB level
7. Total Harmonic Distortion: measured at reference recording level
8. Channel separation: measured at reference recording level
9. Channel crosstalk: measured at 0dB level (reference recording level)
10. Sensitivity: Input level (mV) for reference recording measured with input (recording) level control set at maximum position.
11. Maximum allowable input level: measured at the point where the output signal wave is clipped while gradually turning the input control.
12. Reference output level: meter 0dB level.
13. Maximum output (playback) level: Output level to reference recording level, measured with output (playback) level control set at maximum position.

3-MOTOR 4-HEAD  
TAPE DECK

# RT-707

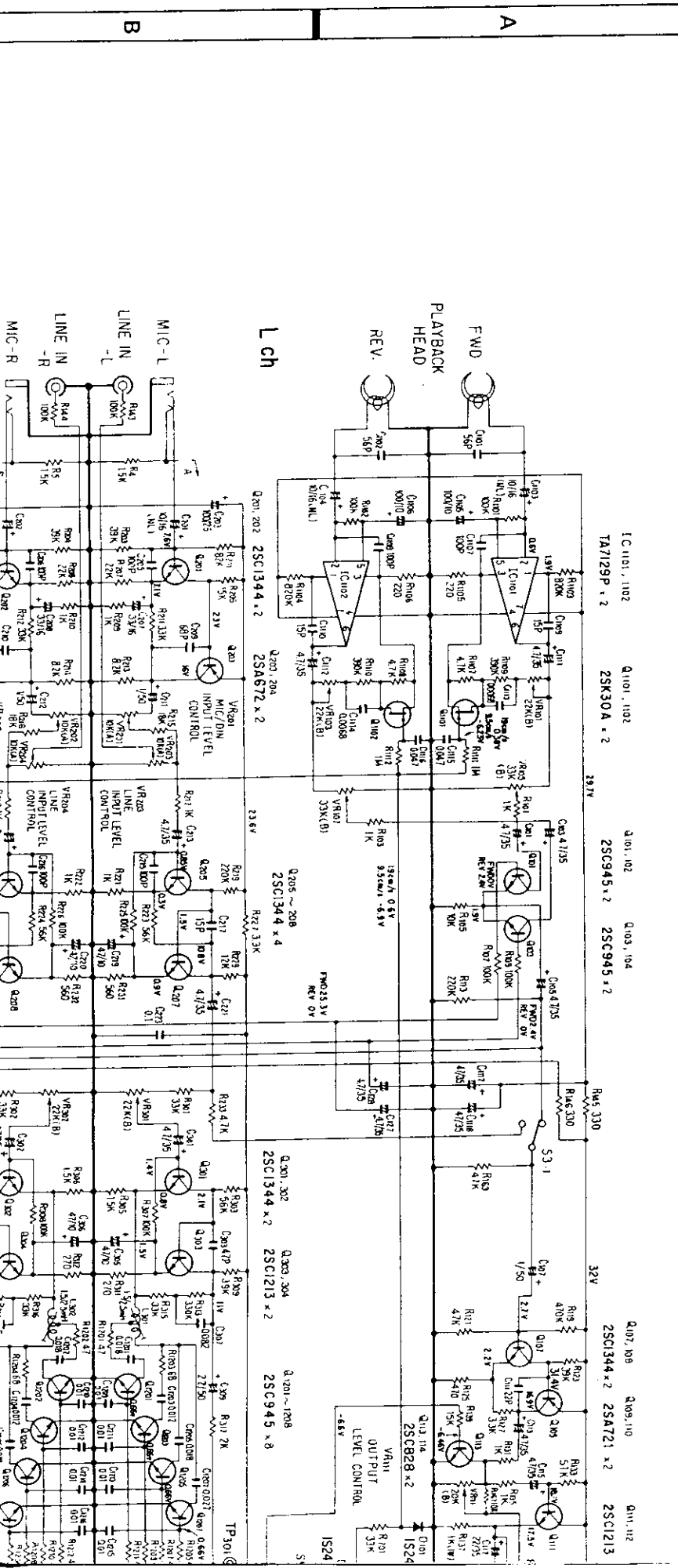
KCU

1

2

3

4



B

A

L ch

Q201, 202 2SC1344 \* 2  
2SA672 \* 2

Q203, 204 2SC1344 \* 4

Q205 ~ 208 2SC1344 \* 4

Q200, 202 2SC1344 \* 2

Q203, 204 2SC1213 \* 2

Q201 ~ 208 2SC945 \* 8

IC101, 102 TAT129P \* 2

Q101, 102 2SK30A \* 2

Q101, 102 2SC945 \* 2

Q102, 108 2SC1344 \* 2

Q109, 110 2SA721 \* 2

Q11, 12 2SC1213

TP301

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

IS24

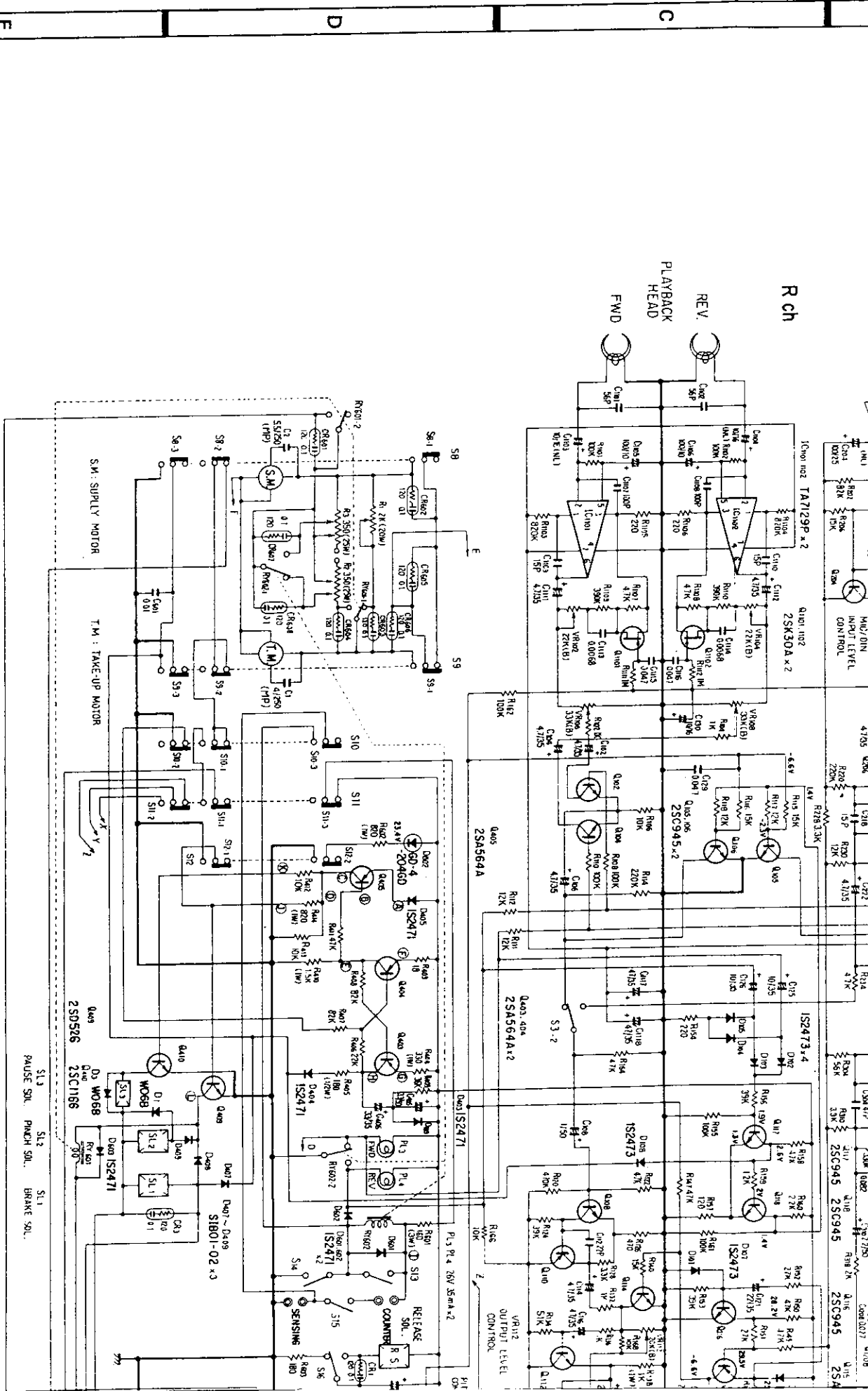
IS24

IS24

IS24

IS24

IS24



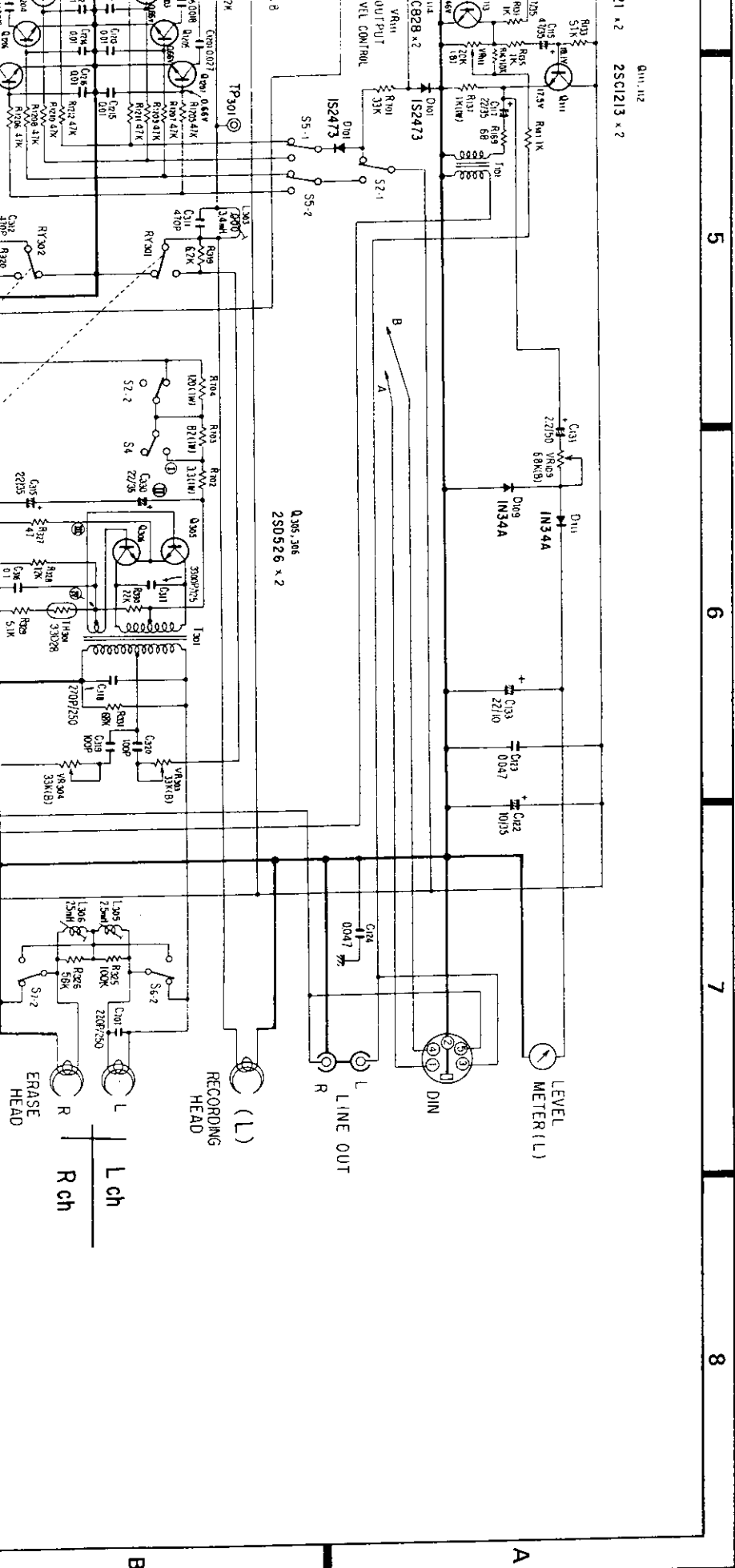
CONTROL

STOP	25.5V	25.2V	0	25.4V	25.5V	25.8V	24.7V	25.5V	0	25.5V	
PLAY	24.4V	23.6V	24.3V	24.3V	1.8V	25.2V	25.2V	25.2V	0.8V	0.7V	0.3V
PLAY/REC	24.4V	23.6V	24.3V	24.3V	1.8V	25.2V	25.2V	25.2V	0.1V	0.8V	0.7V
FAST	25.3V	25.1V	0	25.2V	25.3V	25.6V	0.9V	25.5V	0	0	25.5V
PLAY/PAUSE	24.8V	24.1V	24.7V	24.7V	1.8V	25.7V	25.6V	25.1V	0	0.7V	25.5V
REV											13.6V

DC VOLTAGE AT NO INPUT SIGNAL

RESISTORS : IN OHM /AW 4.5% TOLERANCE UNLESS OT NOTED K: K Ω M: M Ω

CAPACITORS IN μF UNLESS OTHERWISE NOTED P: pF



5 6 7 8

B

A



# 10. HEAD ADJUSTMENTS

Before beginning head adjustment:

- Clean the head and demagnetize the head with a head-eraser.
- The following test equipment are necessary in head adjustment and electrical circuit adjustment.

1. AC voltmeter (millivoltmeter) x 2

2. Oscilloscope

3. Audio frequency generator

4. Frequency counter

5. STD-154 (play system adjustment tape)

6. STD-502 (record/play general adjustment tape)

- Use all the specified measurement tapes.
- Position the switches as follows unless otherwise specified:
- Tape speed . . . . . 19cm/s
- STD BIAS switch . . . . . STD
- EQ switch . . . . . STD
- MONITOR switch . . . . . TAP
- TAP
- MODE switch . . . . . STEREO REC
- Play back control . . . . . Center click
- Make the level at measurement  $0dBV=1V$  and connect a  $50k\Omega$  ( $47 \sim 51k\Omega$ ) dummy resistor to the LINE OUTPUT terminals.

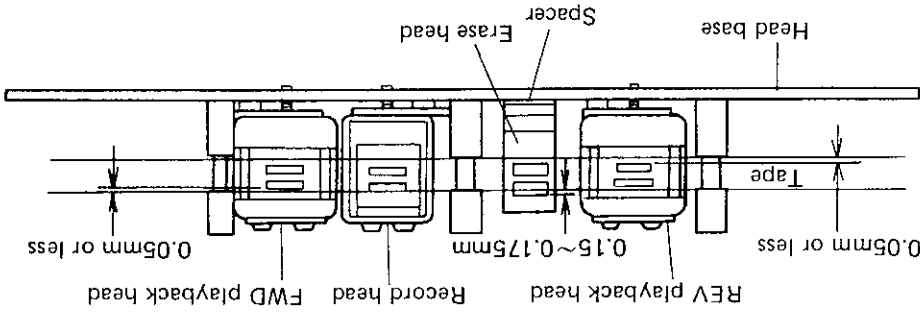


Fig. 30

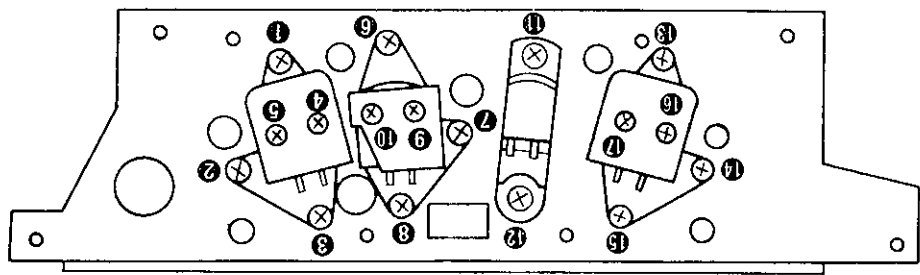


Fig. 31

## 10.1 HEAD ROUGH ADJUSTMENT

### • HEIGHT ADJUSTMENT

Adjust the screws of Fig. 31 so that the heads and tape become the dimensions shown in Fig. 30 when the tape has been run.

- FWD playback head . . . . . 1, 2, 3
- REV playback head . . . . . 4, 5, 6, 7, 8
- Record head . . . . . 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
- Erase head . . . . . 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

\*When the height of the erase head is not the dimension given in Fig. 30, loosen screws 11, 12 and adjust the height by inserting an adjustment spacer under the head.  
Spacer A (0.1t) . . . . . RNF-077  
Spacer B (0.2t) . . . . . RNF-078

### • TILT ADJUSTMENT

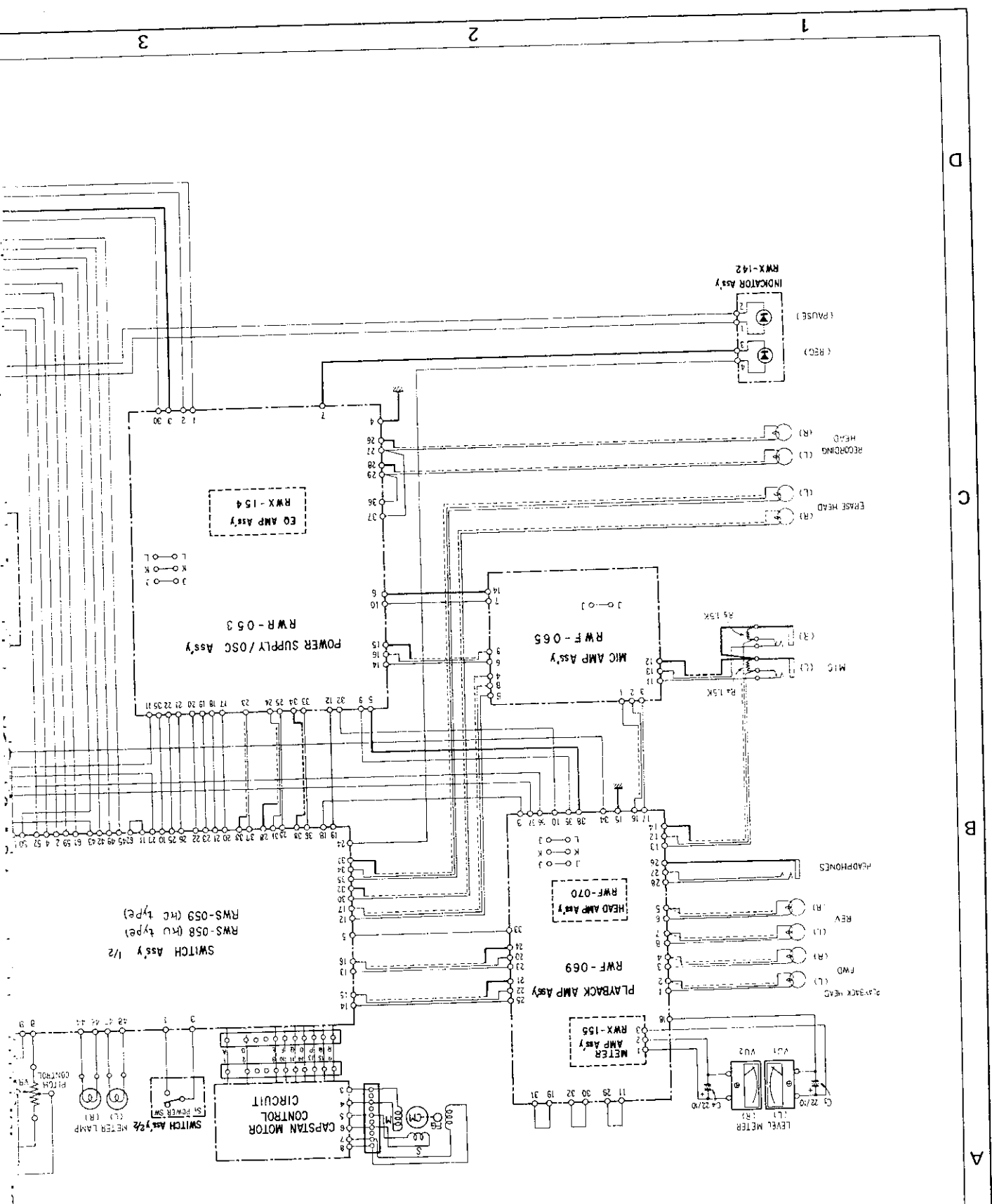
Adjust the screws of Fig. 31 so that the top and bottom of the front of the head contact the tape uniformly when the tape is running.

- FWD playback head . . . . . 1, 3
- REV playback head . . . . . 4, 5, 6, 7, 8
- Record head . . . . . 9, 10, 11, 12, 13, 14, 15, 16, 17, 18

### • AZIMUTH ADJUSTMENT

Adjust the screws of Fig. 31 so that the head gaps are at right angles to the tape.

- FWD playback head . . . . . 2
- REV playback head . . . . . 4, 14
- Record head . . . . . 7



3

2

1

D

C

B

A

INDICATOR Assy  
RMX-142

(PAUSE)  
(REC)

RECORDING HEAD  
(L)  
(R)

ERASE HEAD  
(L)  
(R)

EQ AMP Assy  
RMX-154

L  
K  
J

POWER SUPPLY/OSC Assy  
RWR-053

MIC AMP Assy  
RWF-065

As 15K  
As 15K

HEAD AMP Assy  
RWF-070

HEADPHONES

REV  
(L)  
(R)

FWD  
(L)  
(R)

SWITCH Assy 1/2  
RWS-058 (ku type)  
RWS-059 (mc type)

PLAYBACK AMP Assy  
RWF-069

METER AMP Assy  
RMX-155

LEVEL METER  
Ct 22/0  
V1 VU2  
V1 VU1

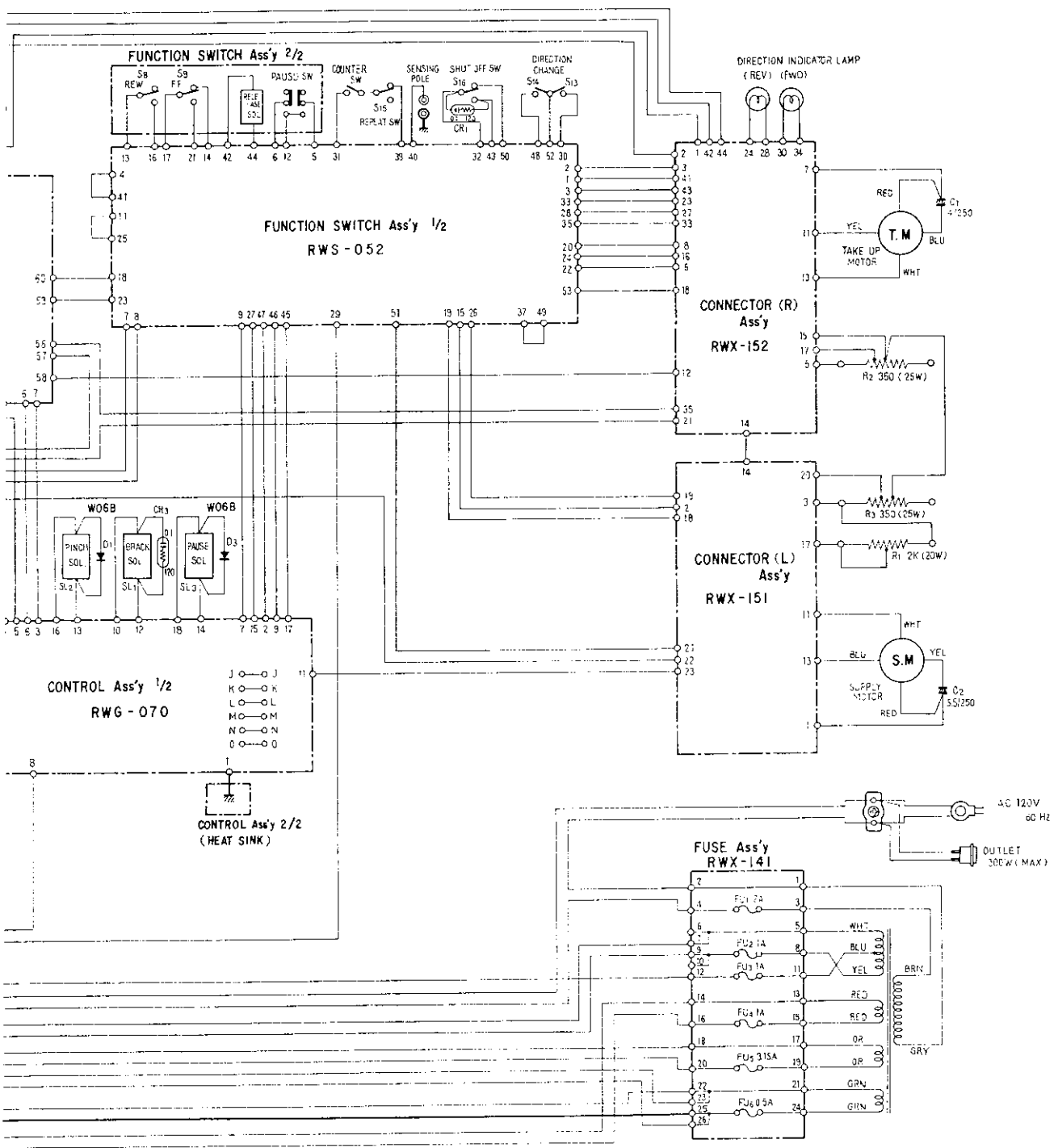
CAPSTAN MOTOR CONTROL CIRCUIT

SWITCH Assy 2/2  
RWS-058  
NETER LAMP  
(L) (R)

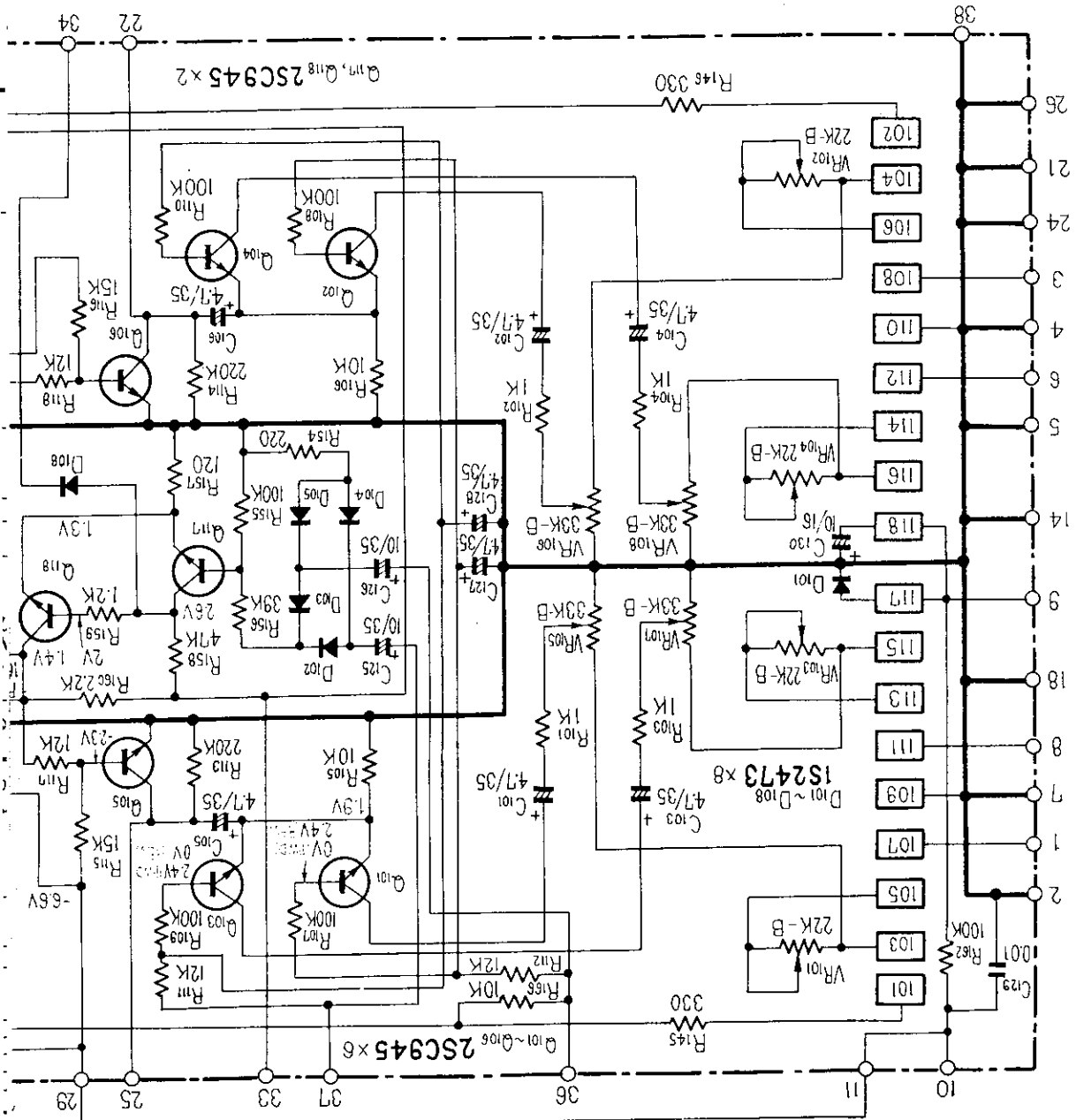
SM. POWER SW

PITCH CONTROL  
VA





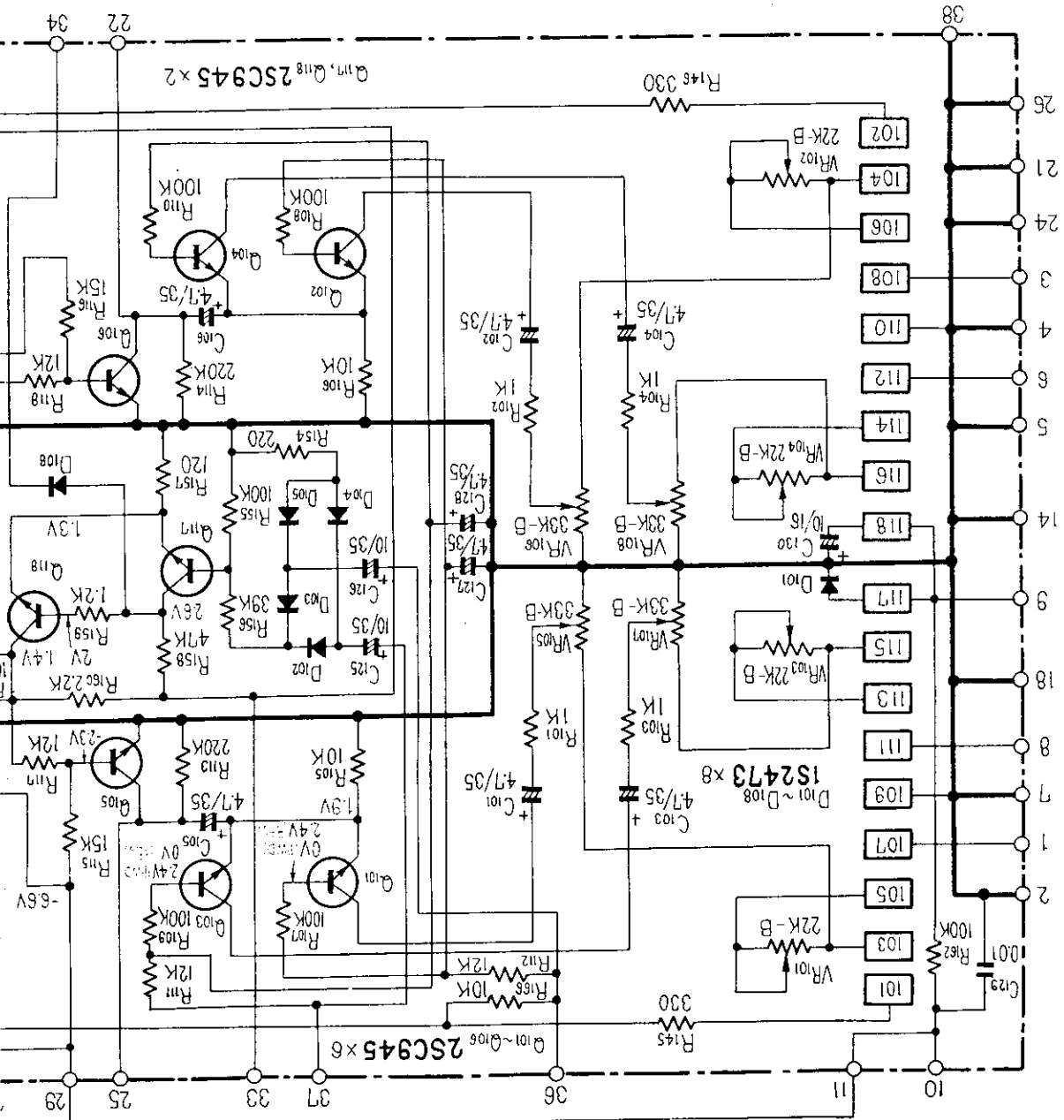
13.5 PLAYBACK AMPLIFIER ASSEMBLY (RWF-069)

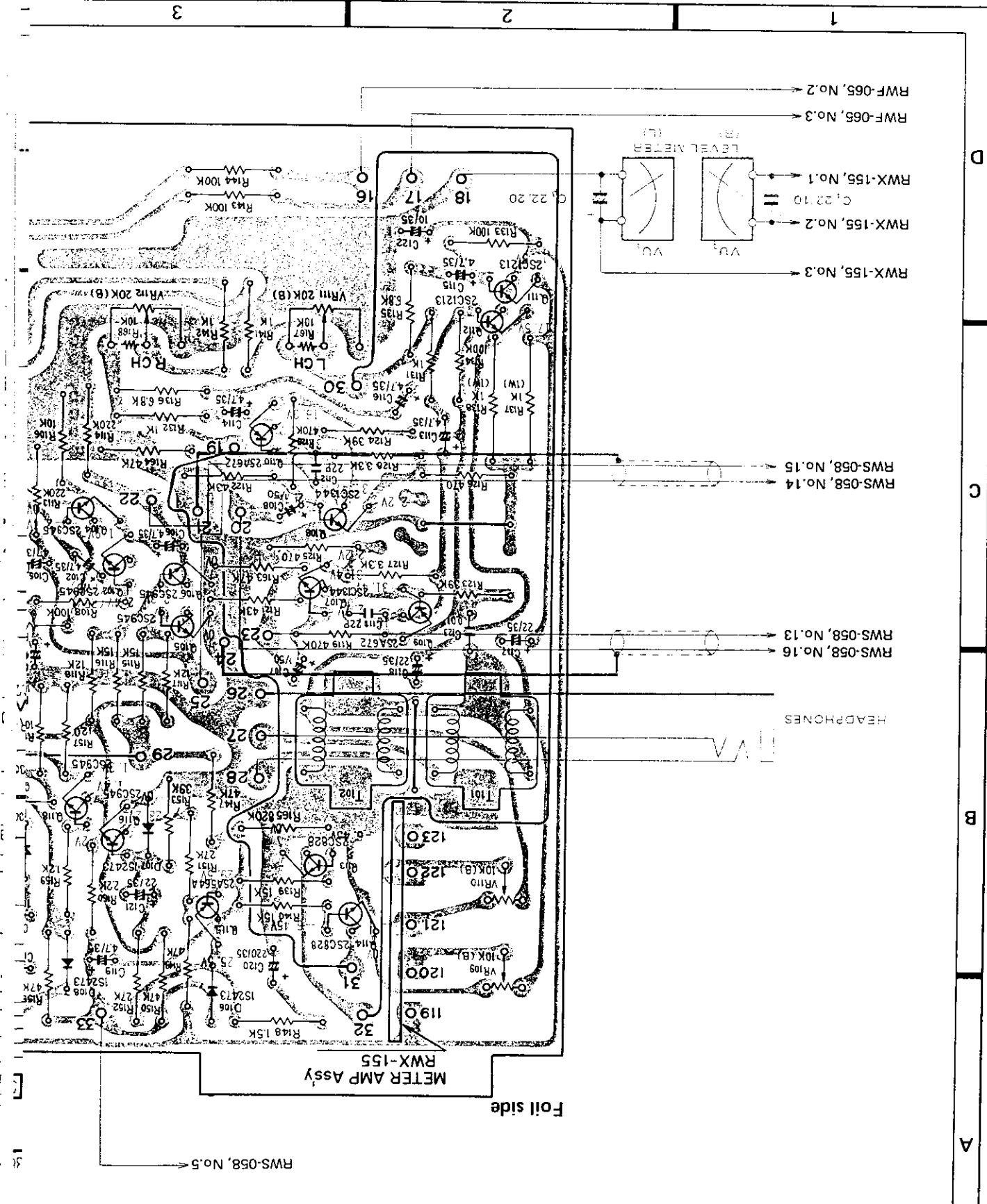


Q117, Q118 2SC945 x 2

Q101~Q106 2SC945 x 6

D101~D108 1S2473 x 8





METER AMP Assy  
RWX-155

Foil side

RWS-058, No.5

HEADPHONES

RWS-058, No.16  
RWS-058, No.13

RWS-058, No.14  
RWS-058, No.15

RWX-155, No.3  
RWX-155, No.2  
C, 22 10  
RWX-155, No.1  
LEVEL METER  
VU  
VU

RWF-065, No.3  
RWF-065, No.2

3 2 1

D

C

B

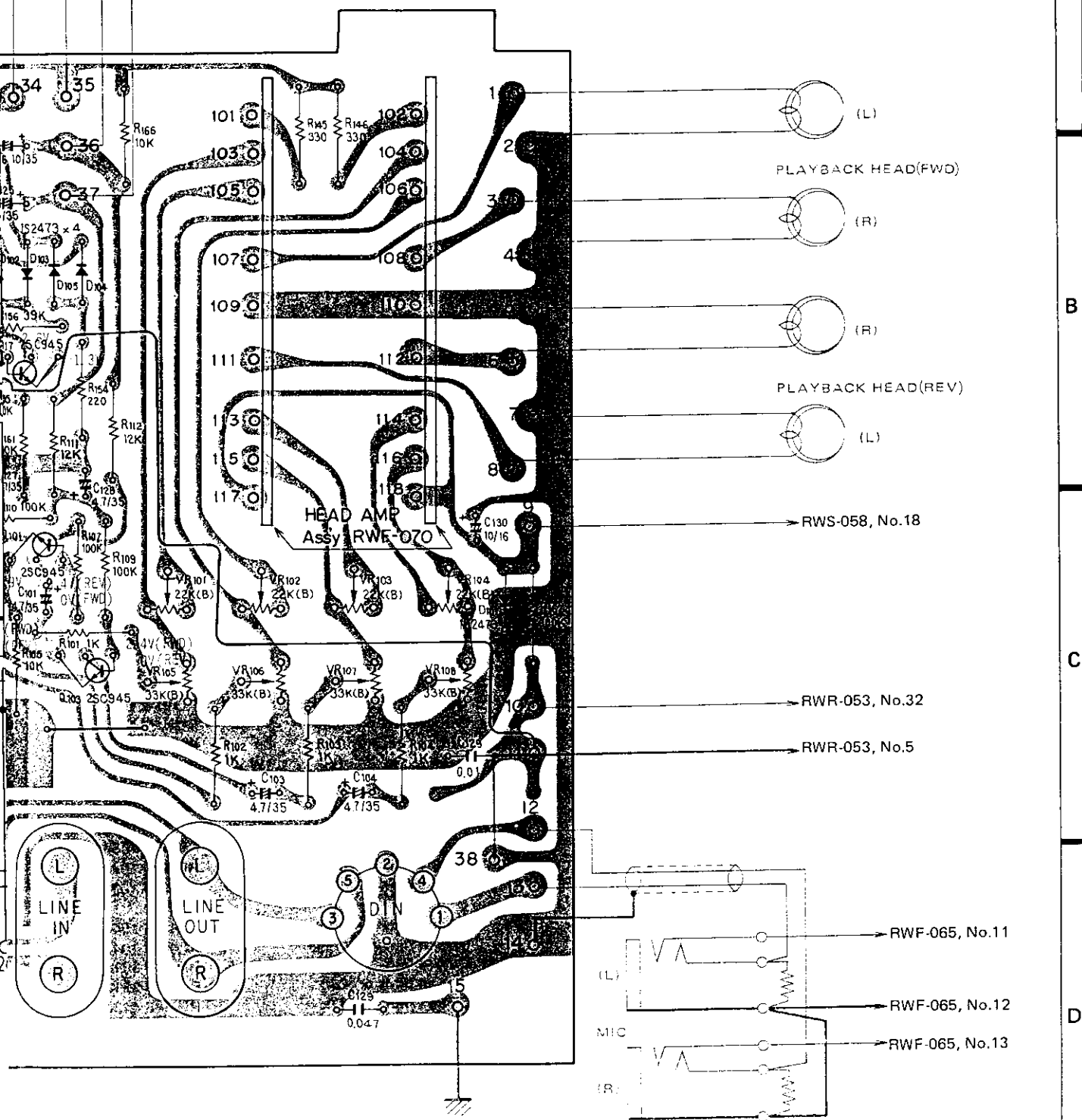
A

4

5

6

- RWR-053, No.9
- RWX-152, No.21
- RWS-058, No.57



A

B

C

D

- (L)
- PLAYBACK HEAD (FWD)
- (R)
- (R)
- PLAYBACK HEAD (REV)
- (L)

→ RWS-058, No.18

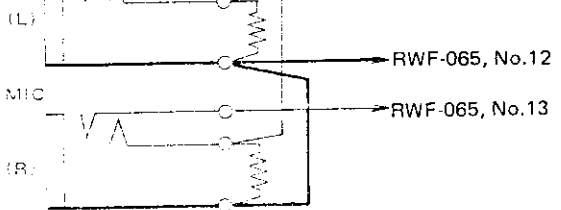
→ RWR-053, No.32

→ RWR-053, No.5

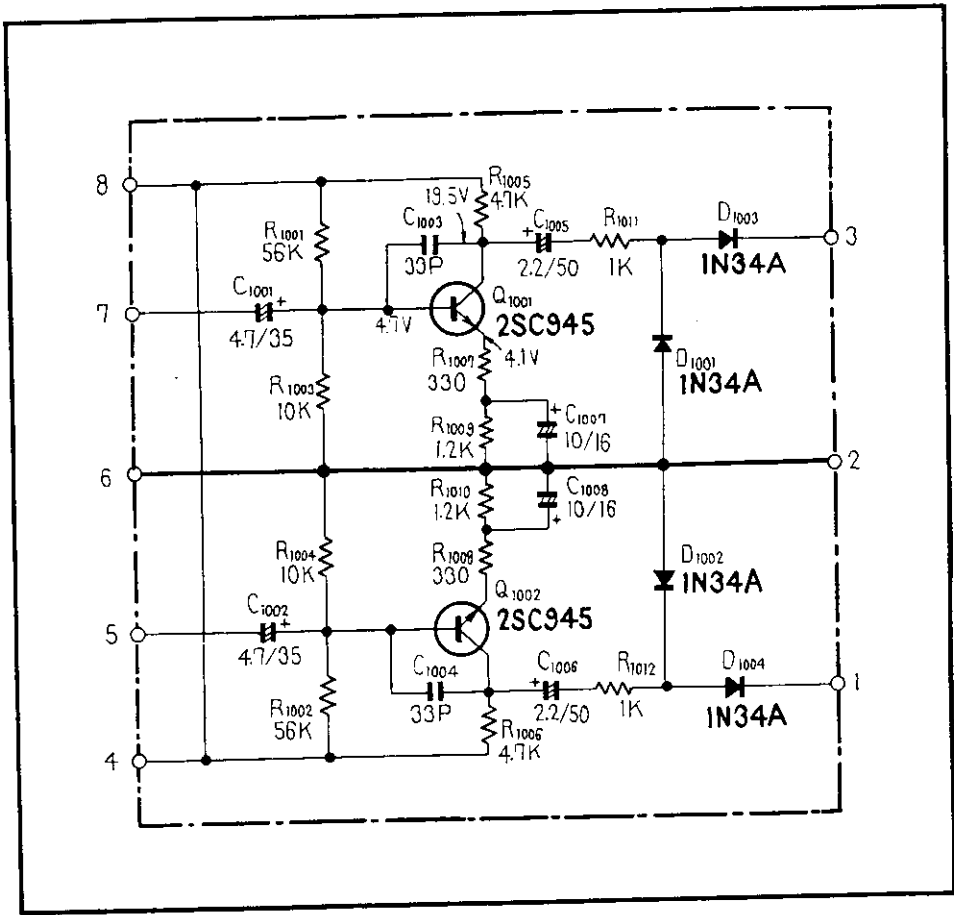
→ RWF-065, No.11

→ RWF-065, No.12

→ RWF-065, No.13



# 13.6 METER AMPLIFIER ASSEMBLY (RWX-155)



RWF-069, No.18

C<sub>3</sub> 22/10

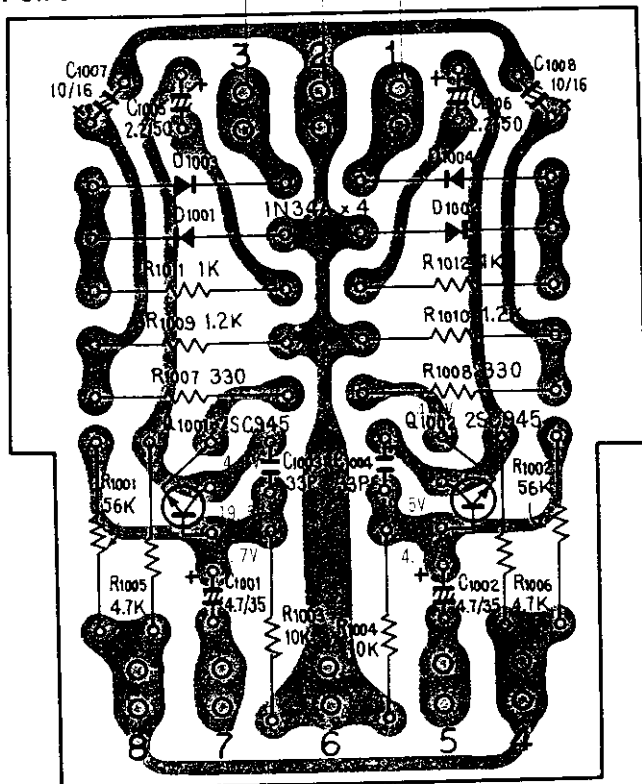
(L) VU<sub>1</sub>

LEVEL METER

(R) VU<sub>2</sub>

C<sub>4</sub> 22/10

Foil side



13.7 POWER AND OSCILLATION ASSEMBLY (RWR-053)

3

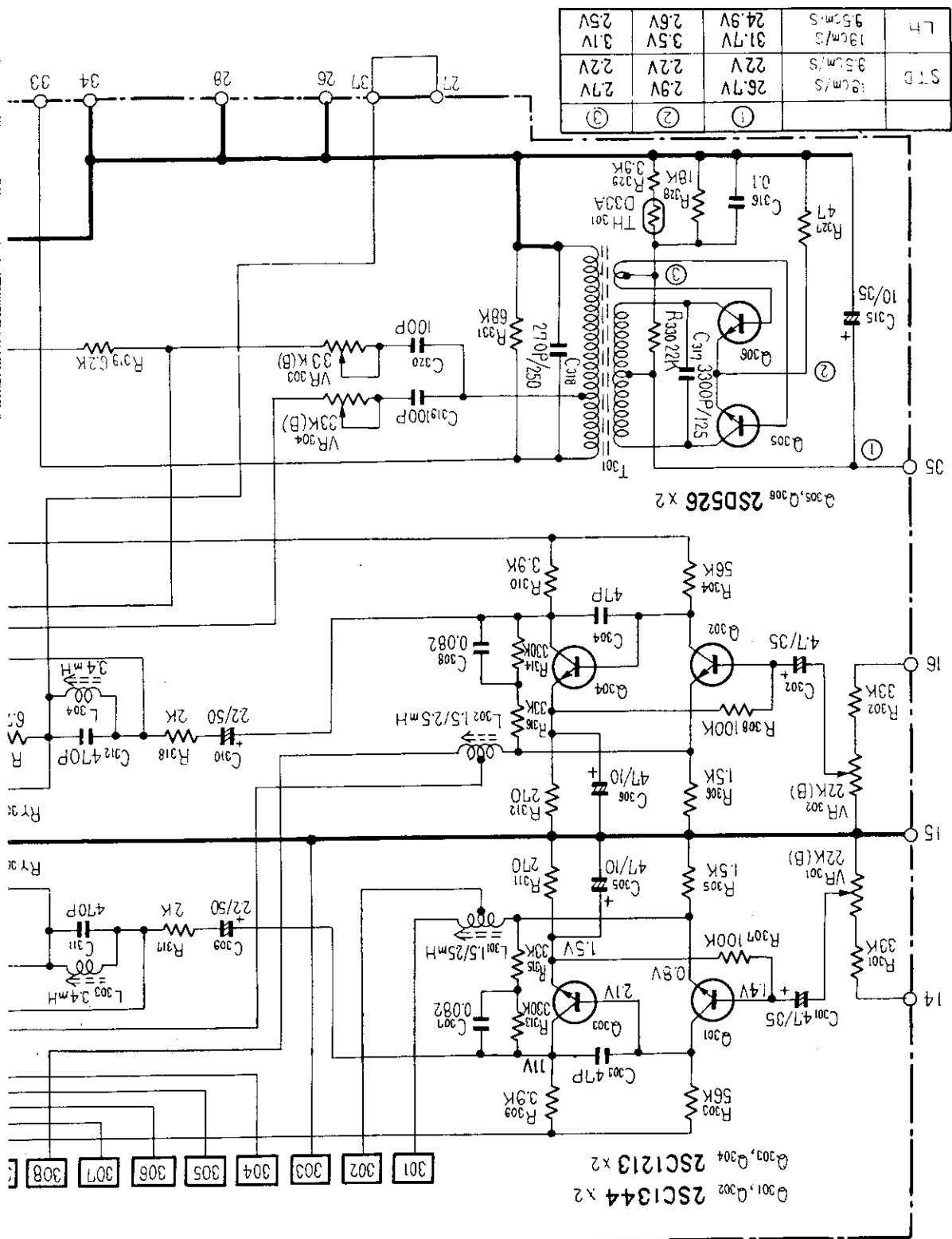
2

A

B

C

D



STD	1.6cm/S	2.7V	2.2V	2.2V	2.7V	2.2V	2.2V	③
LH	1.8cm/S	3.1V	3.5V	3.1V	3.1V	3.5V	3.1V	②
	1.5cm/S	24.9V	26.7V	24.9V	26.7V	24.9V	26.7V	①

3

2

1

33

34

28

26

37

27

35

16

15

14

6

38

308

307

306

305

304

303

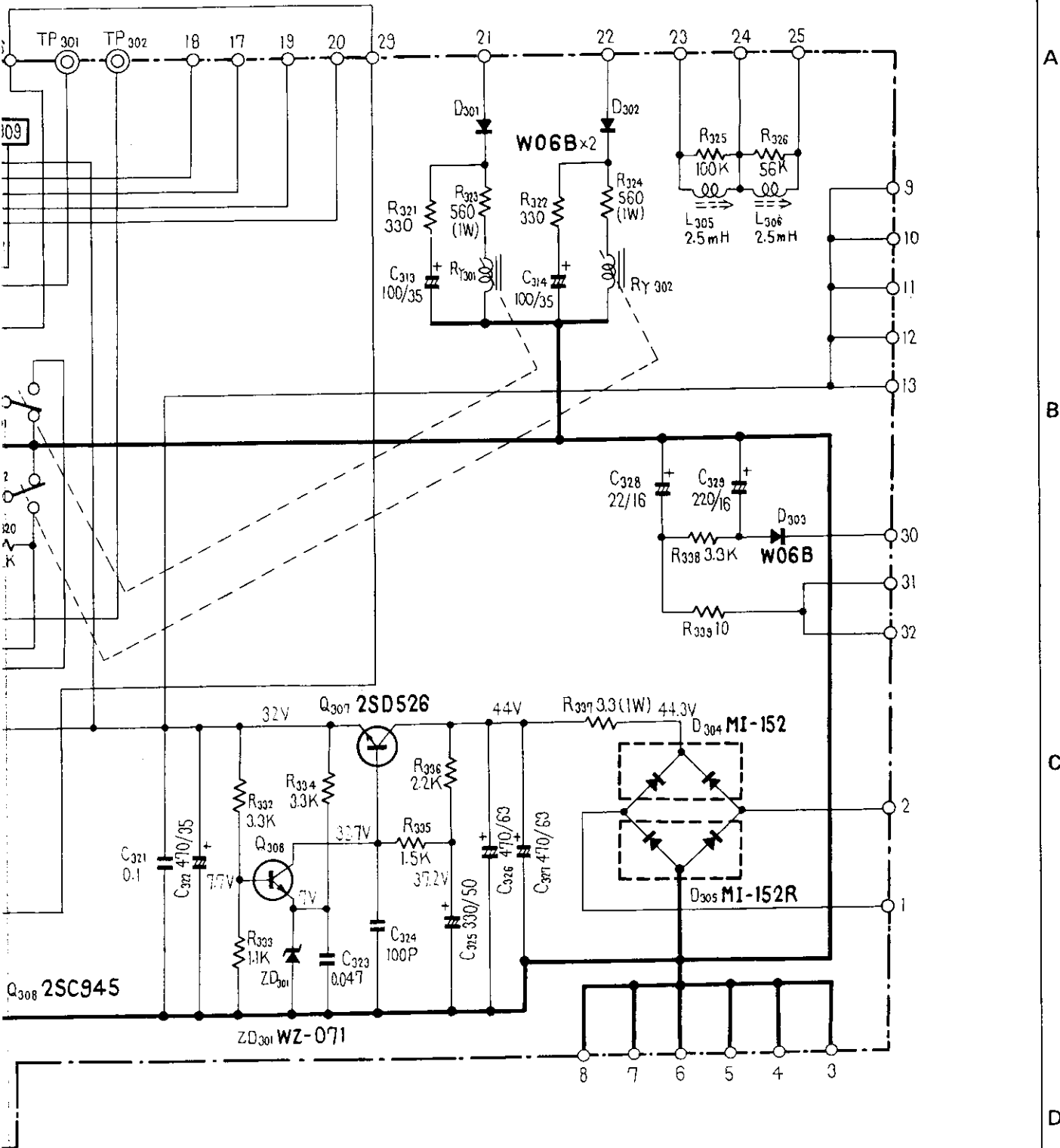
302

301

2SC1344 x2  
Q301, Q302

2SC1213 x2  
Q303, Q304

2SD526 x2  
Q305, Q306



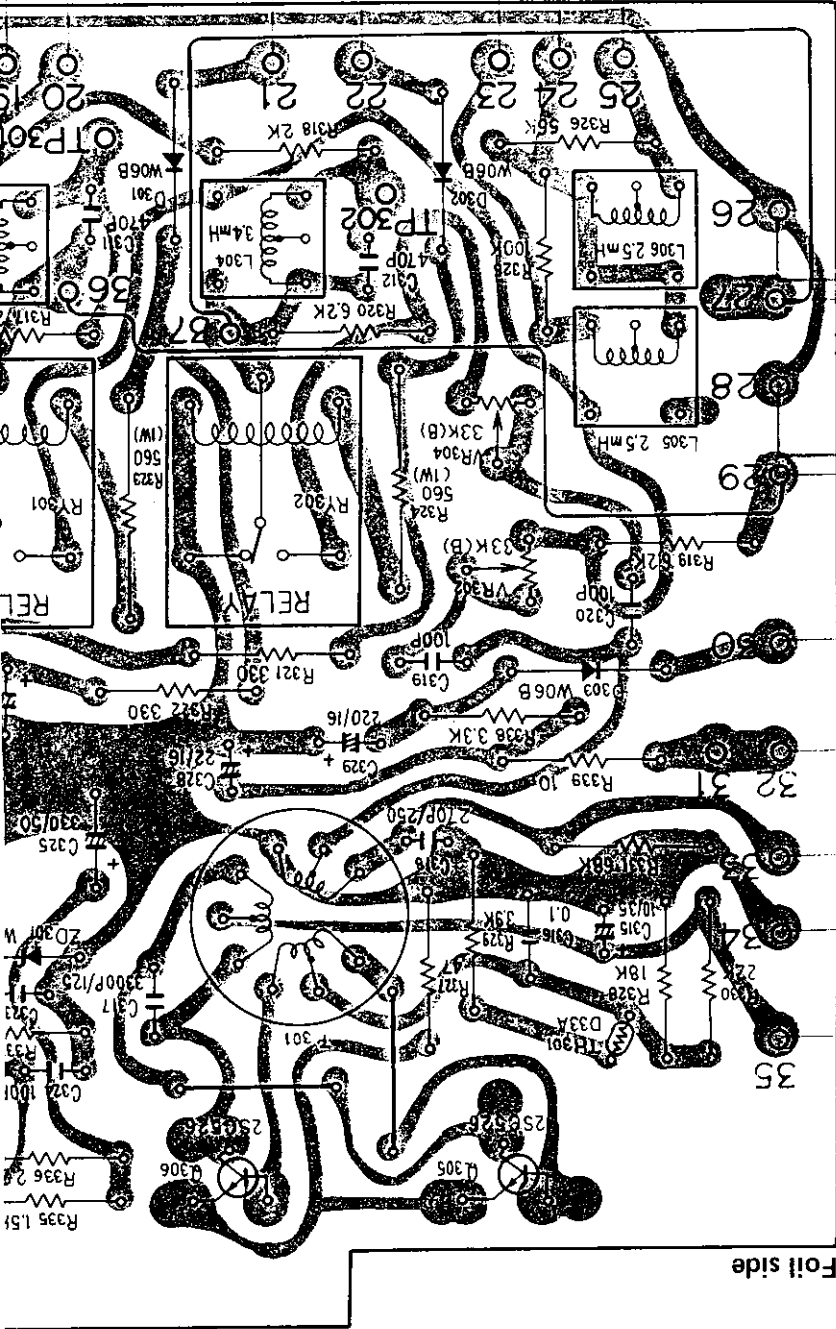
A

B

C

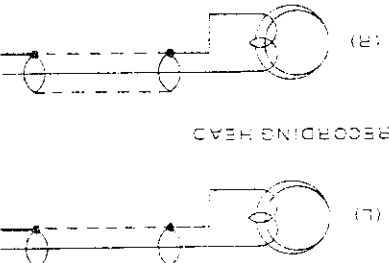
D



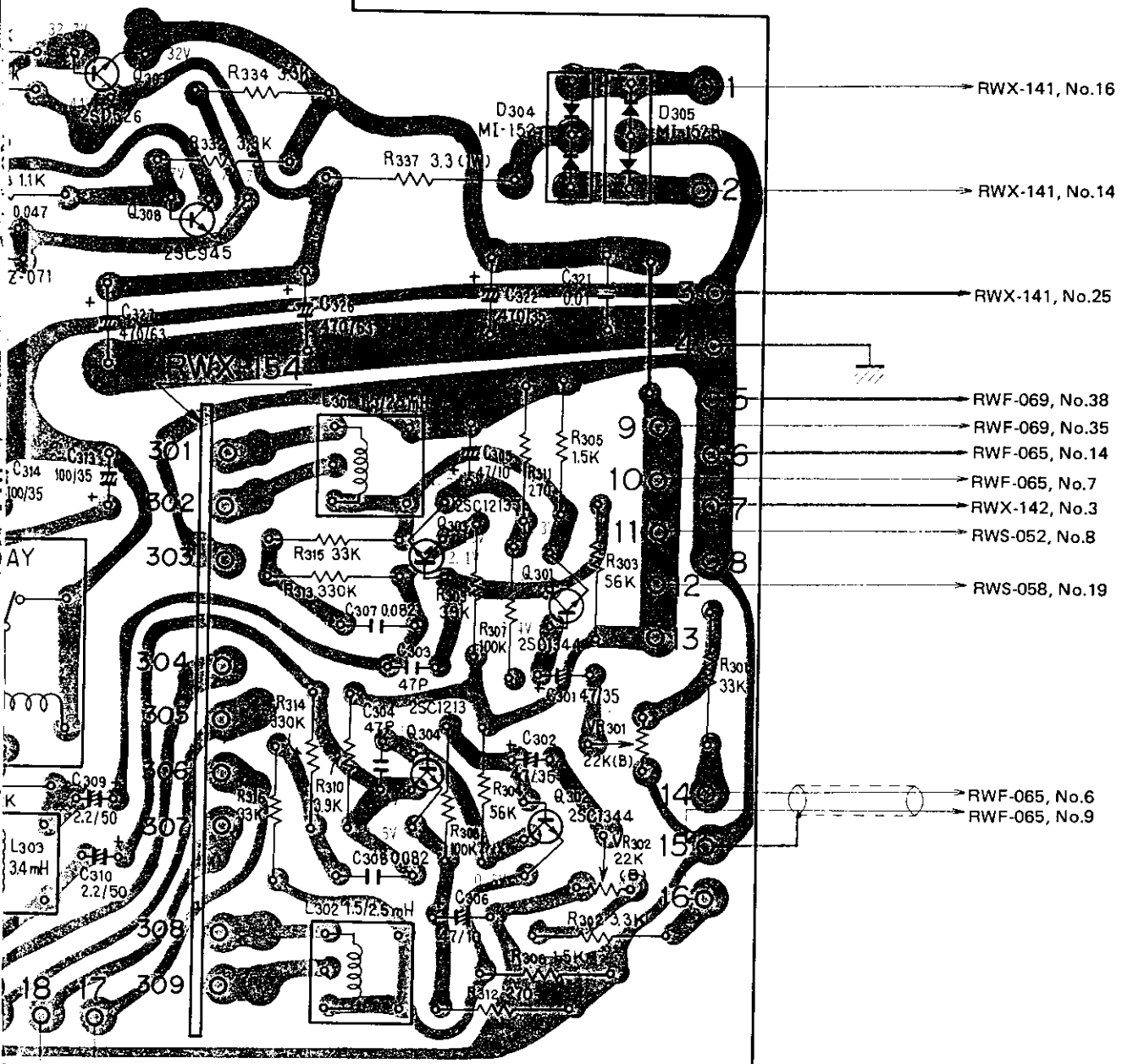


Foil side

RWS-058, No.29  
 RWS-058, No.31  
 RWS-058, No.37



RWX-141, No.22  
 RWF-069, No.10  
 RWS-053, No.36  
 RWS-058, No.38  
 RWS-053, No.10



→ RWX-141, No.16

→ RWX-141, No.14

→ RWX-141, No.25

→ RWF-069, No.38

→ RWF-069, No.35

→ RWF-065, No.14

→ RWF-065, No.7

→ RWX-142, No.3

→ RWS-052, No.8

→ RWS-058, No.19

→ RWF-065, No.6

→ RWF-065, No.9

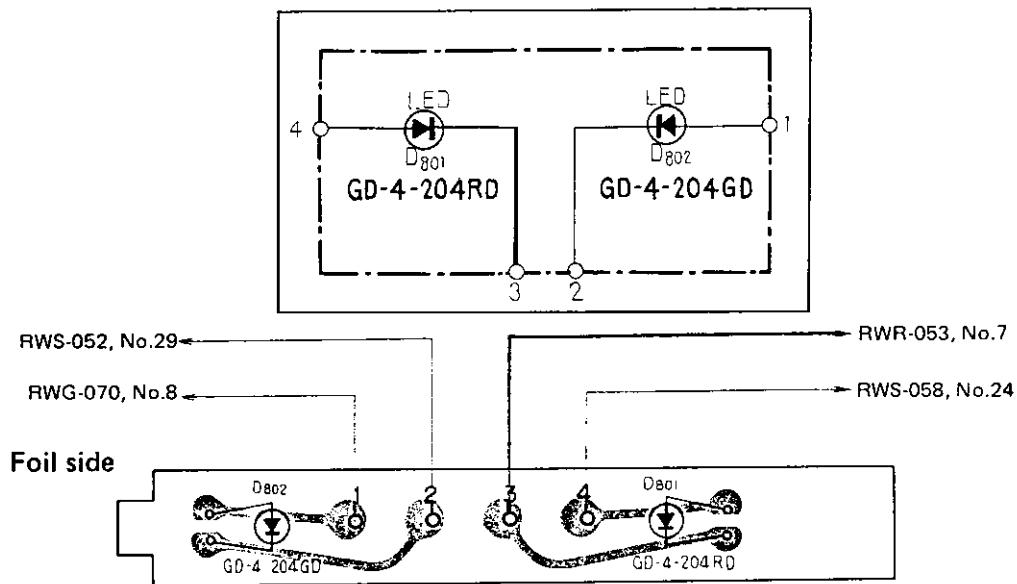
→ RWS-058, No.20

→ RWS-058, No.21

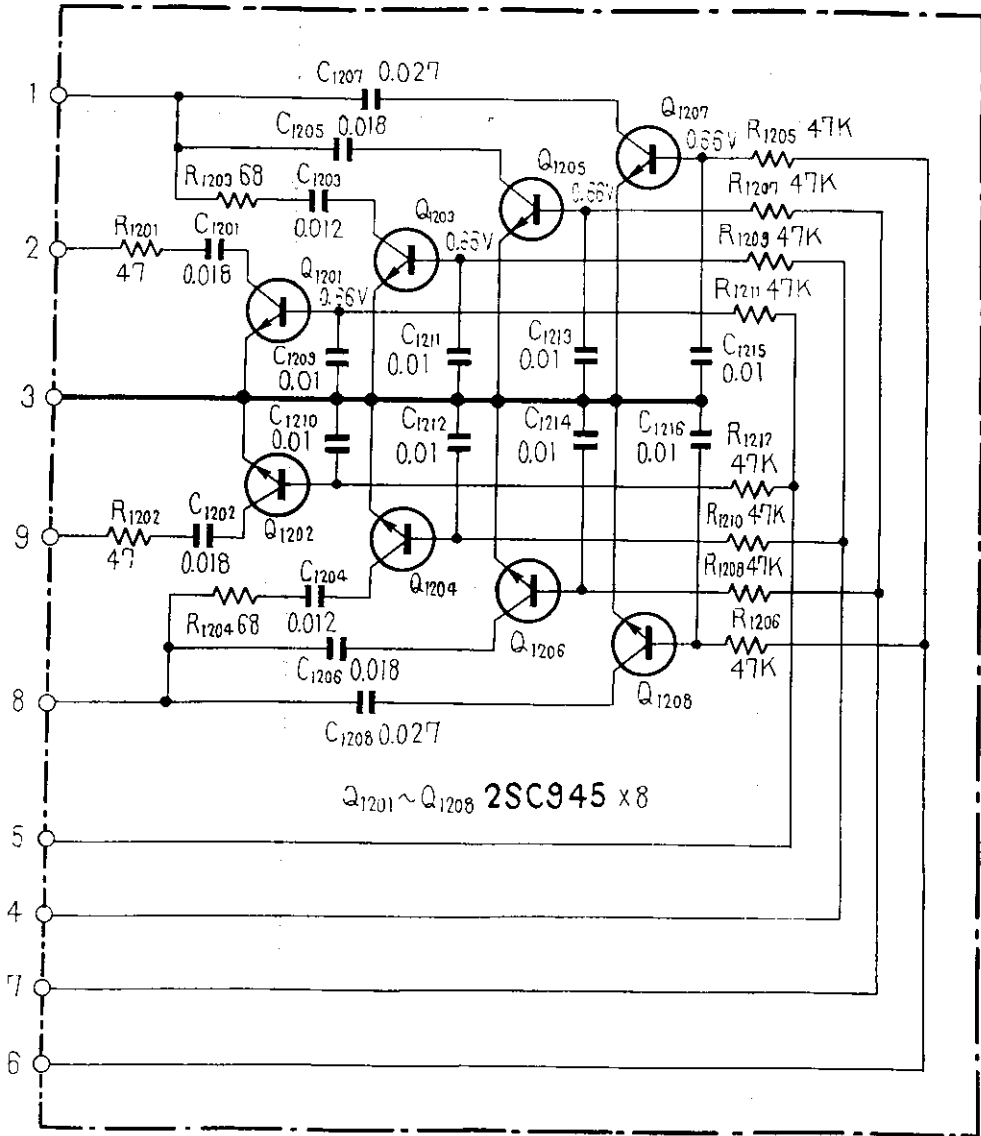
→ RWS-058, No.23

→ RWS-058, No.22

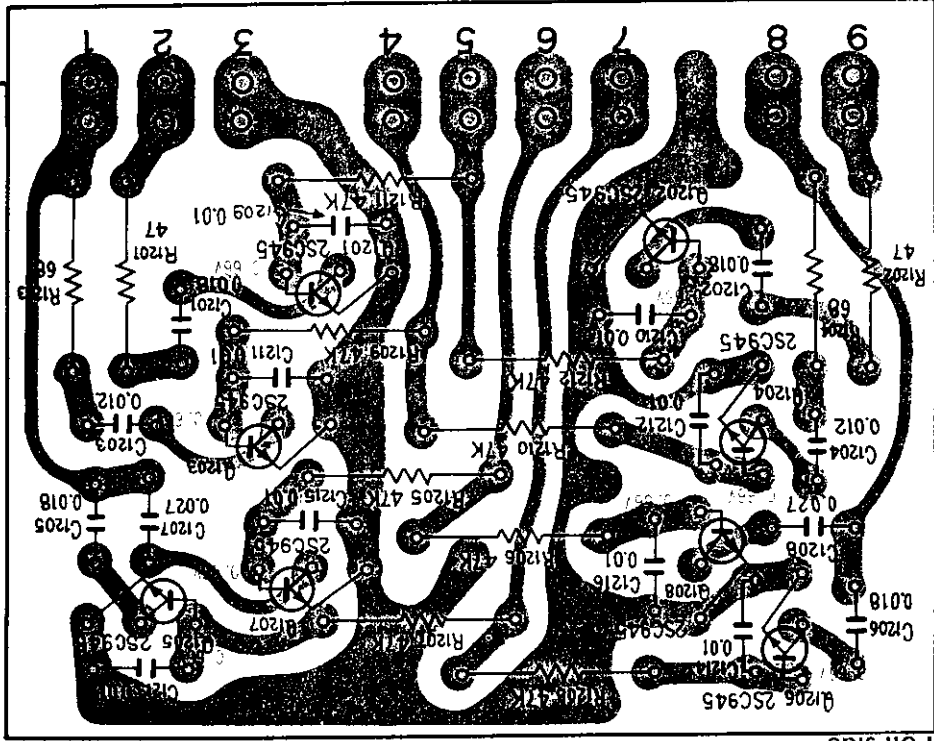
## 13.8 INDICATOR ASSEMBLY (RWX-142)



# 13.10 EQUALIZER AMPLIFIER ASSEMBLY (RWX-154)

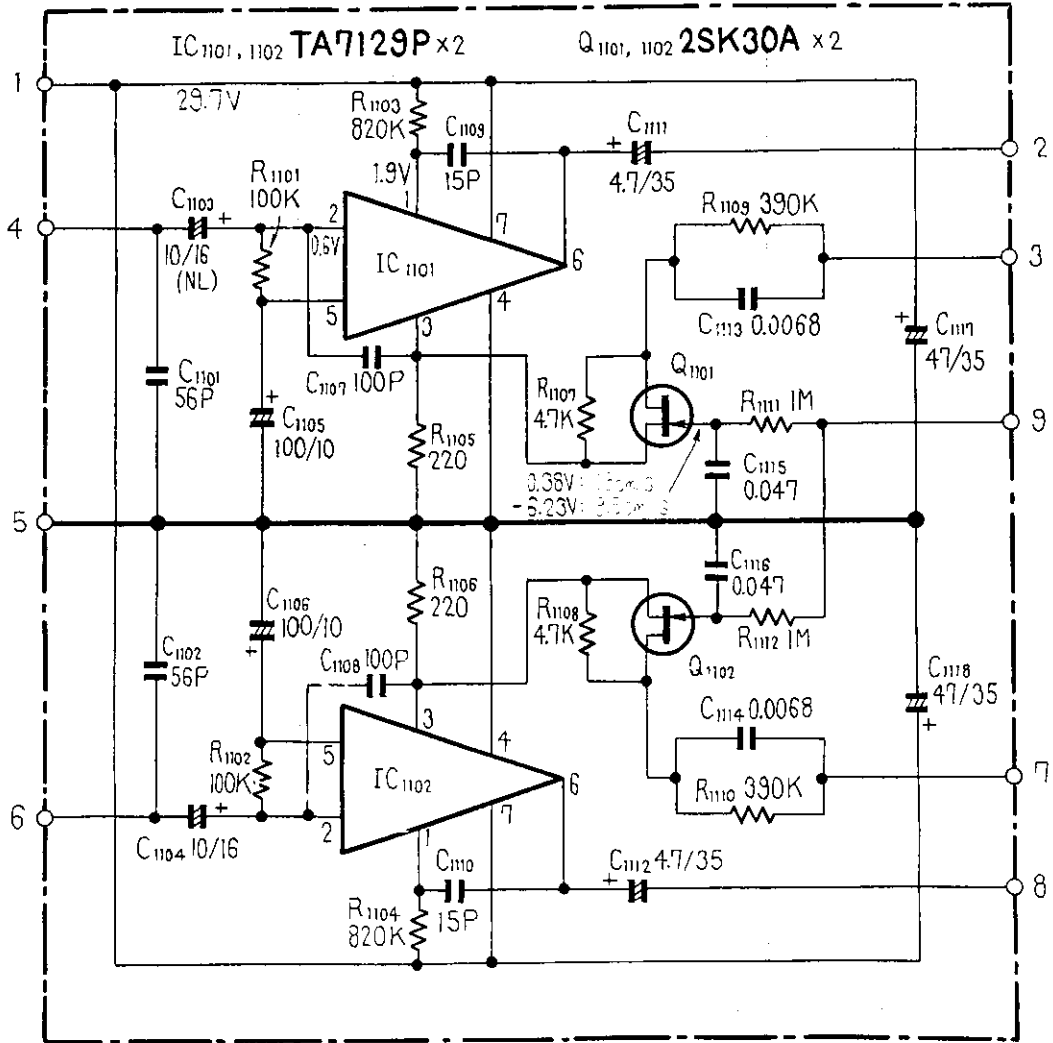


## ON POWER AND OSCILLATION ASSEMBLY (RWR-053)



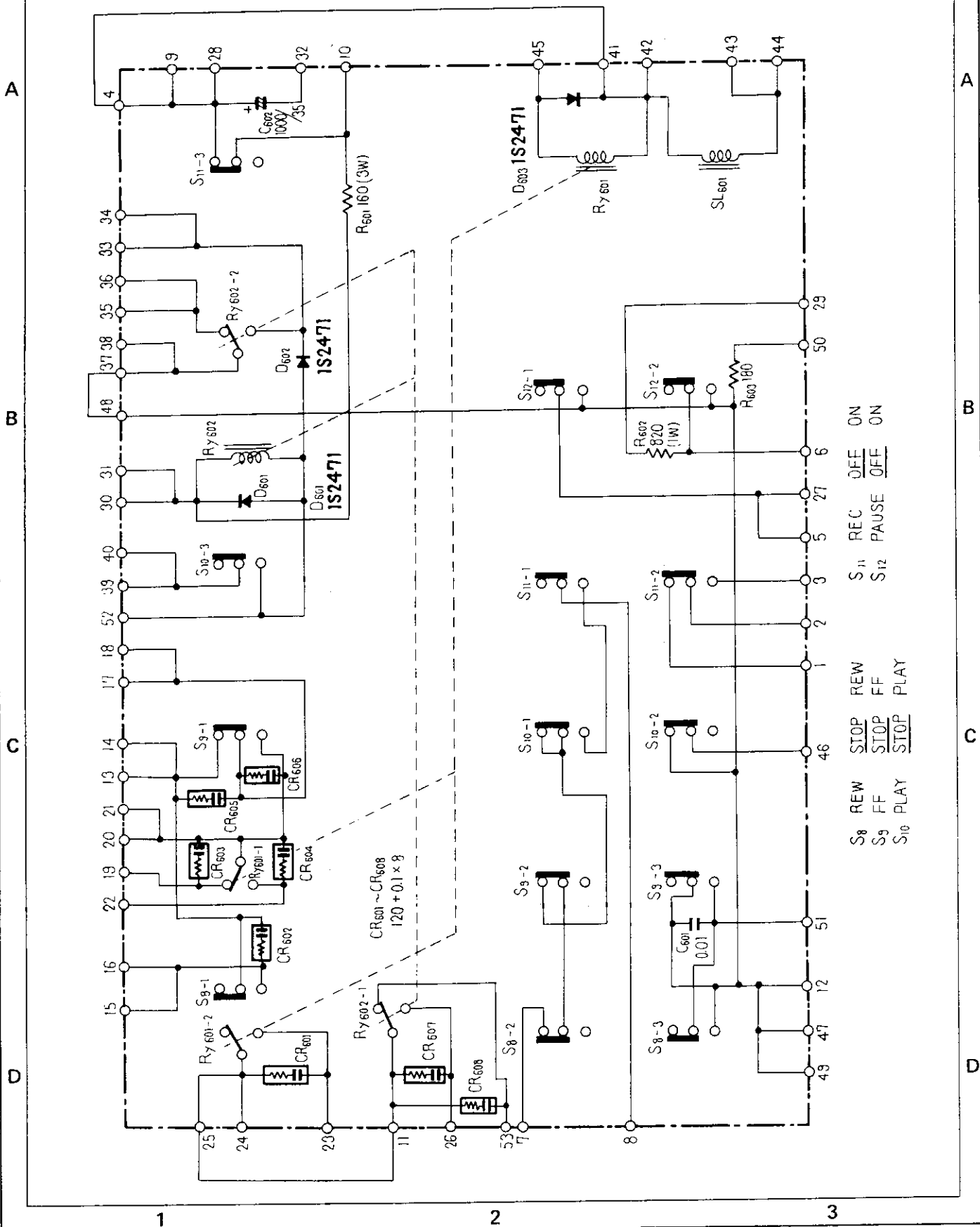
Foil side

13.11 HEAD AMPLIFIER ASSEMBLY (RWF-070)





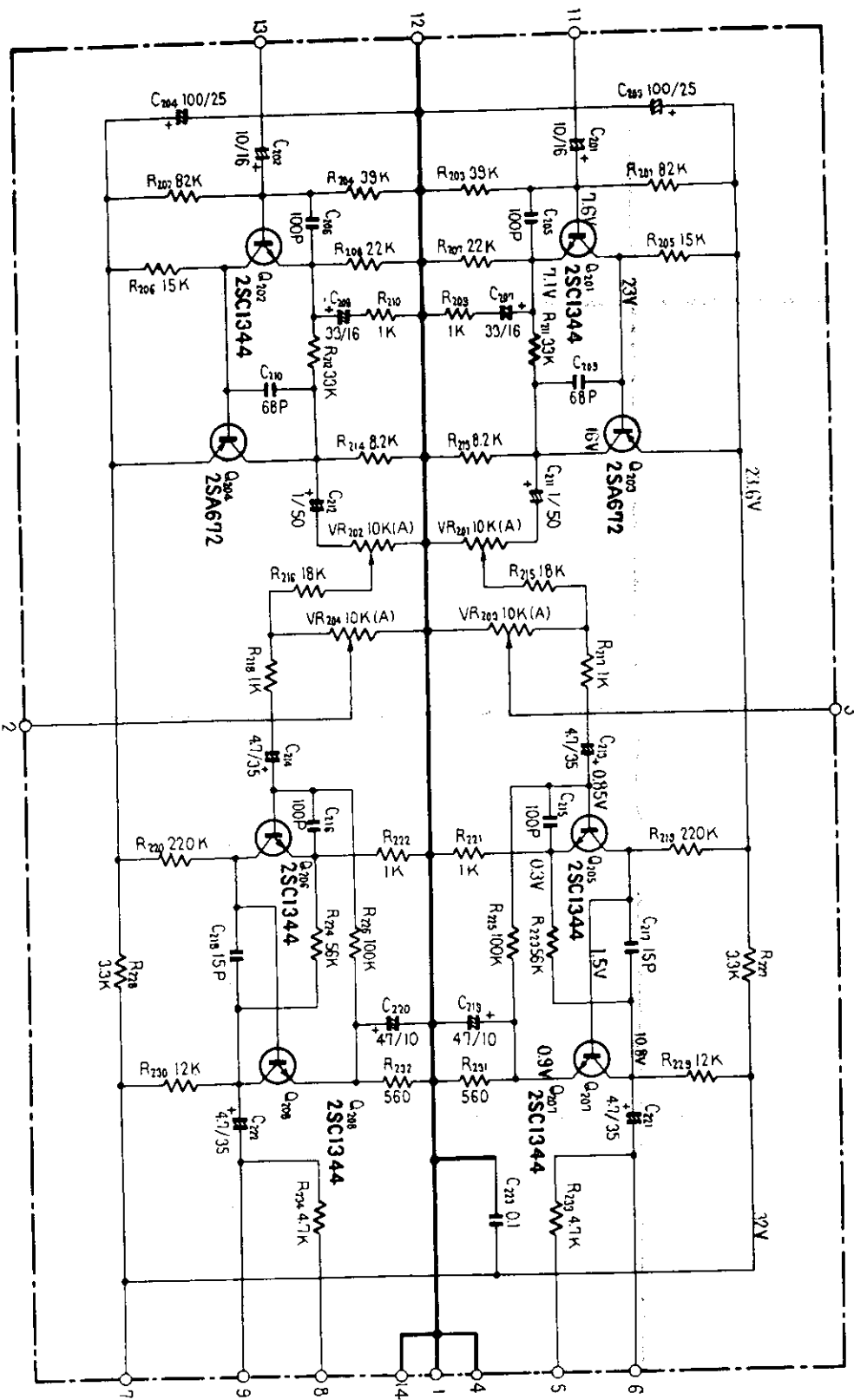
# 13.14 FUNCTION SWITCH ASSEMBLY (RWS-052)



S8 REW STOP REW S11 REC OFF ON  
 S9 FF STOP FF S12 PAUSE OFF ON  
 S10 PLAY STOP PLAY



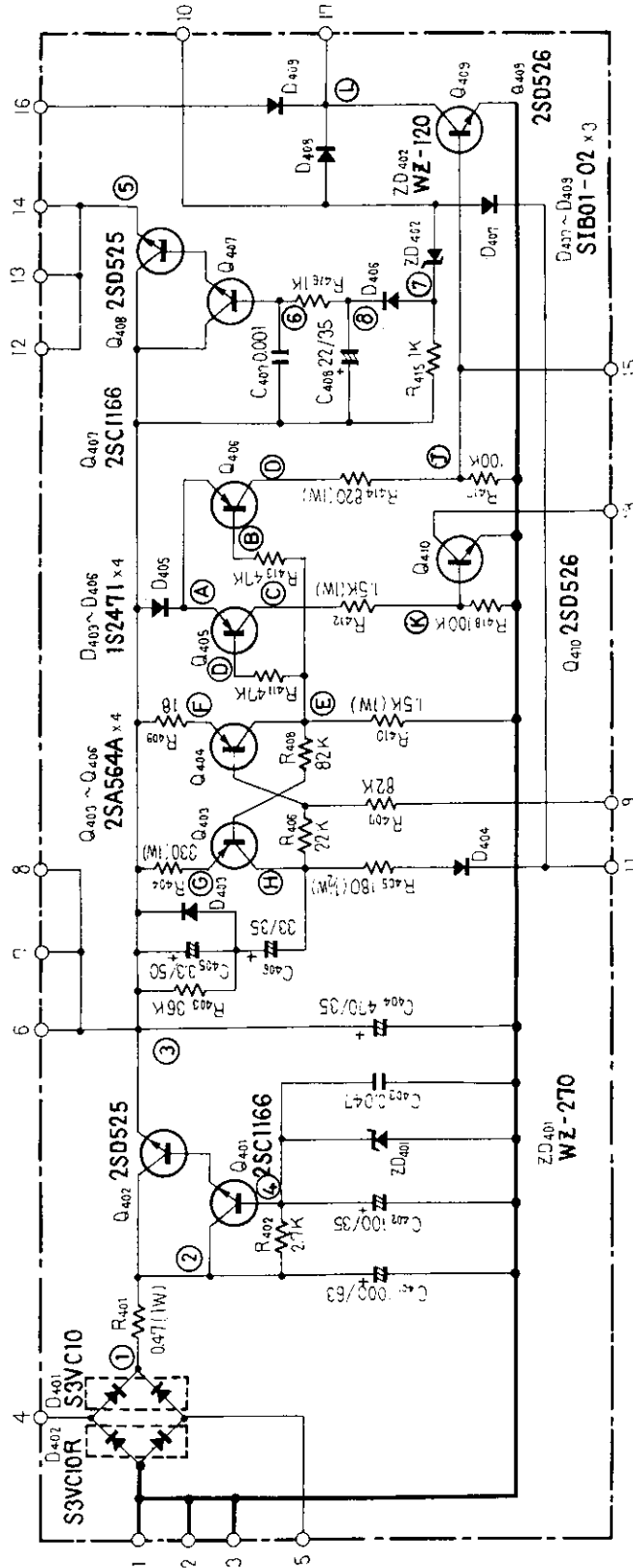
13.15 MIC AMPLIFIER ASSEMBLY (RWF-065)







# 13.16 CONTROL ASSEMBLY (RWG-070)

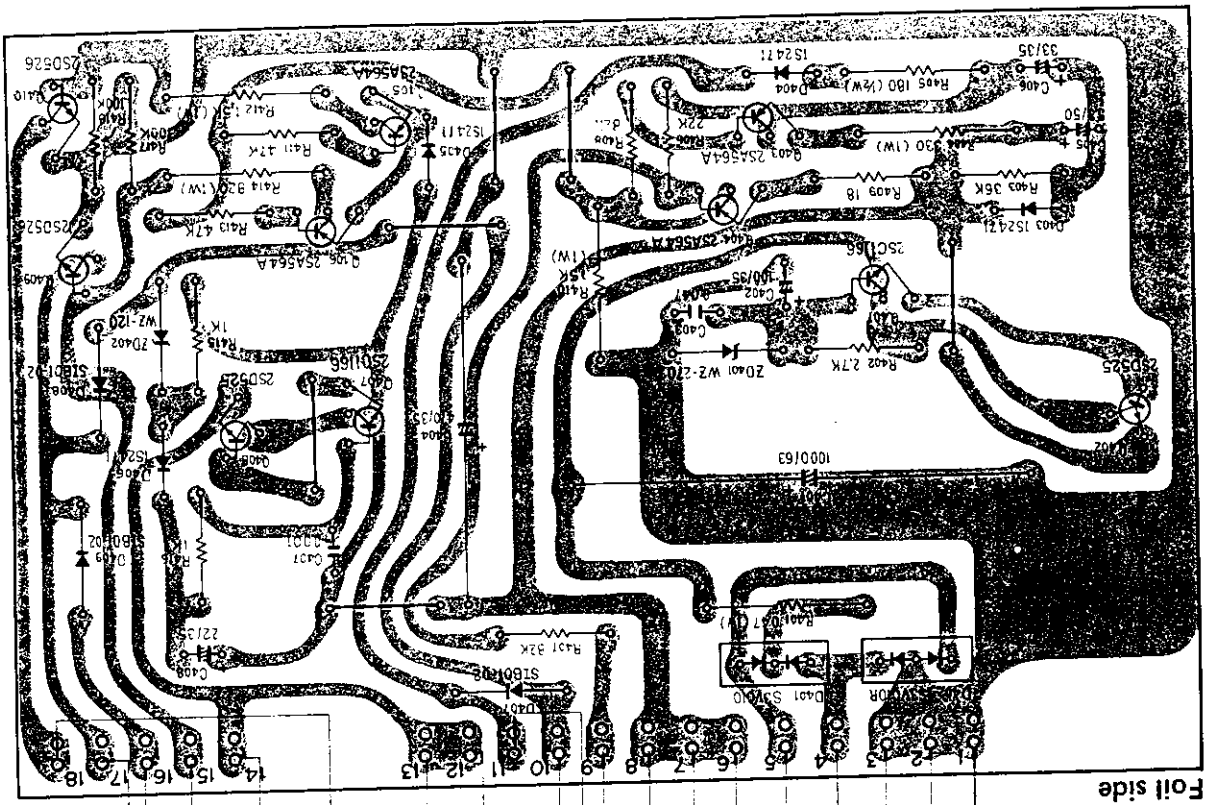


CONTROL

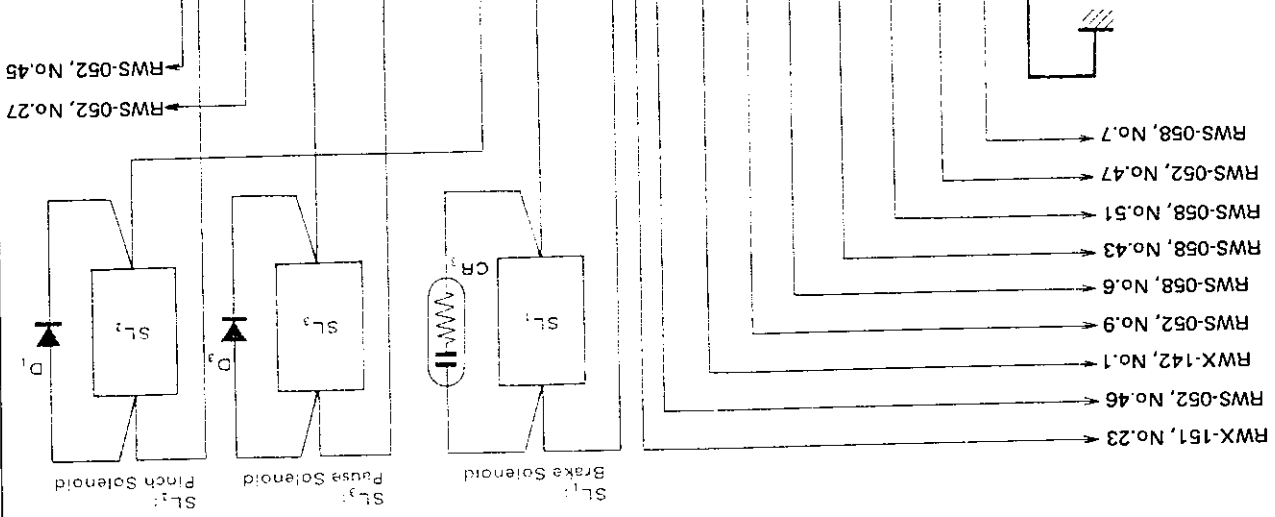
CONTROL	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
STOP	25.5V	25.2V	0	0	25.4V	25.5V	25.8V	24.7V	0	0	25.5V	
PLAY	24.4V	23.6V	24.3V	24.3V	1.8V	25.2V	25.2V	25.2V	0.8V	0.7V	0.3V	
PLAY/REC	24.4V	23.6V	24.3V	24.3V	1.8V	25.2V	25.2V	25.2V	0.8V	0.7V	0.3V	
FAST	25.3V	25.1V	0	0	25.2V	25.3V	25.6V	0.9V	0	0	25.5V	
PLAY/PAUSE	24.8V	24.1V	24.7V	24.7V	1.8V	25.7V	25.6V	25.1V	0	0.7V	25.5V	
REV												

POWER SUPPLY

POWER SUPPLY	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
STOP	41V	40.7V	25.6V	27V	24.9V	25.5V	25.8V	25.5V
PLAY	33.6V	33V	25.2V	26.6V	11V	12.4V	12.9V	12.4V
FAST	38V	37.8V	25.4V	26.8V	11V	12.4V	12.7V	12.4V

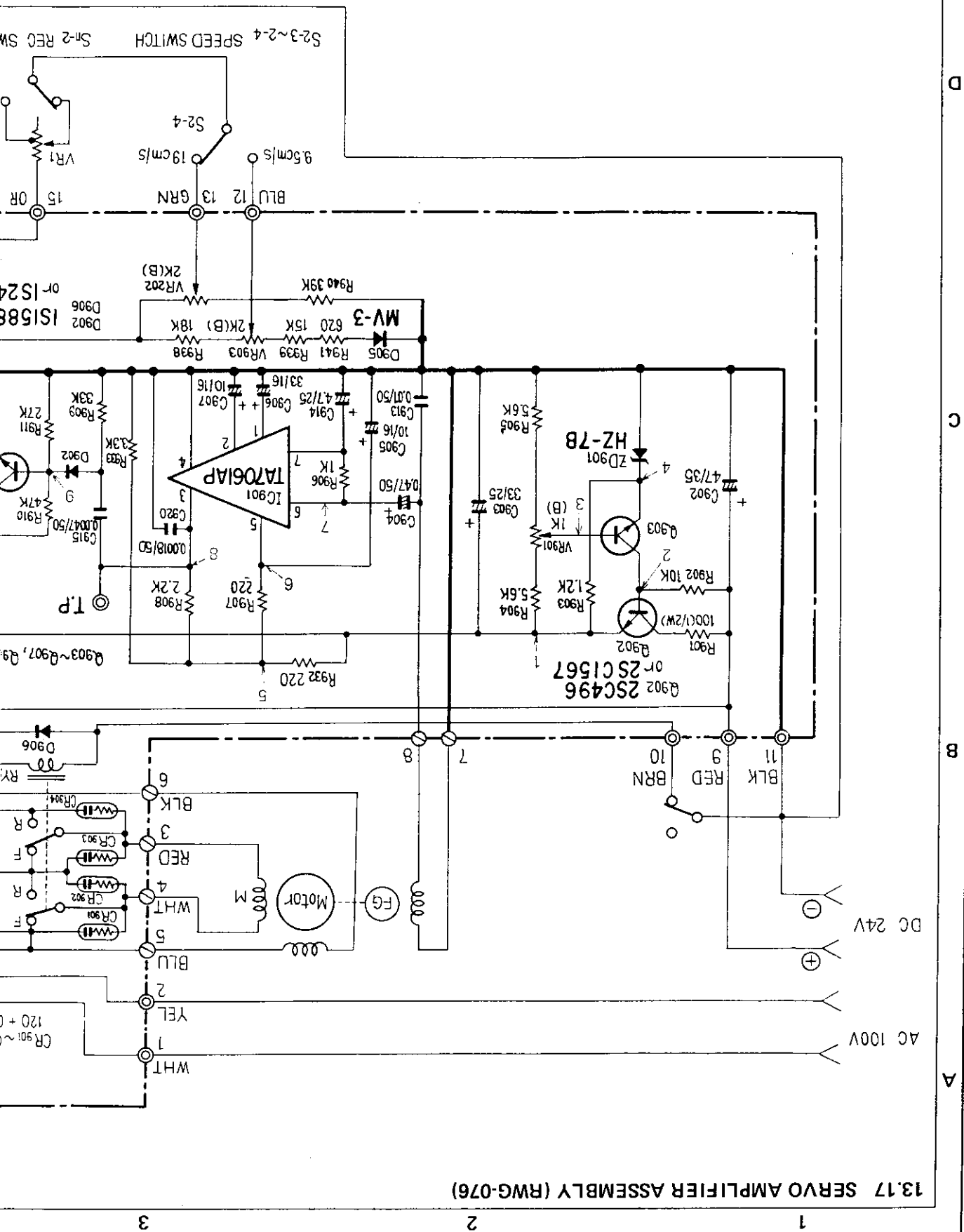


Foil side



SL1: Brake Solenoid  
 SL2: Pinch Solenoid  
 SL3: Pause Solenoid

13.17 SERVO AMPLIFIER ASSEMBLY (RWG-076)



A

B

C

D

1

2

3

AC 100V  
DC 24V

11 BLK  
9 RED  
10 BRN

6 BLK  
3 RED  
4 WHT  
5 BLU  
2 YEL  
1 WHT

12 BLU  
13 GRN  
15 OR

S2-3~2-4 SPEED SWITCH

MV-3

ZSC496  
OR  
ZSC1567

HZ-7B

TA7061AP

VR1  
OR

D902  
OR IS24

T.P.

Q903~Q907, Q909

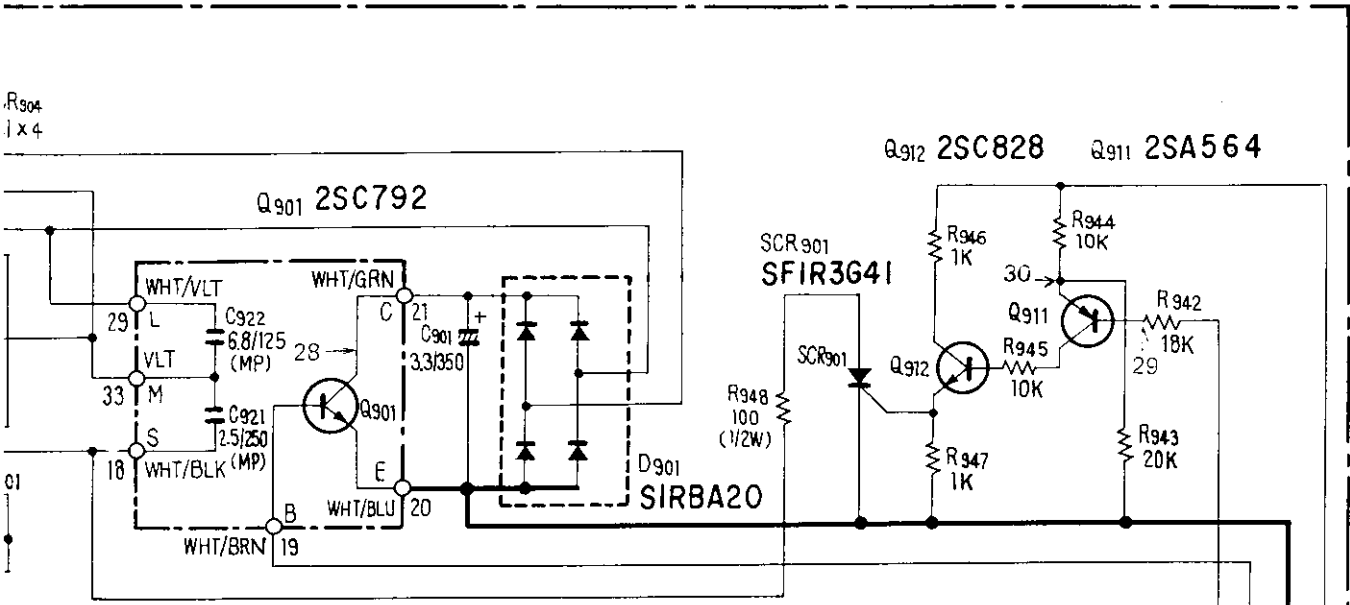
D906

CR901~120 + C

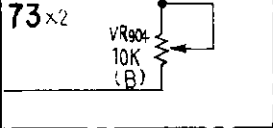
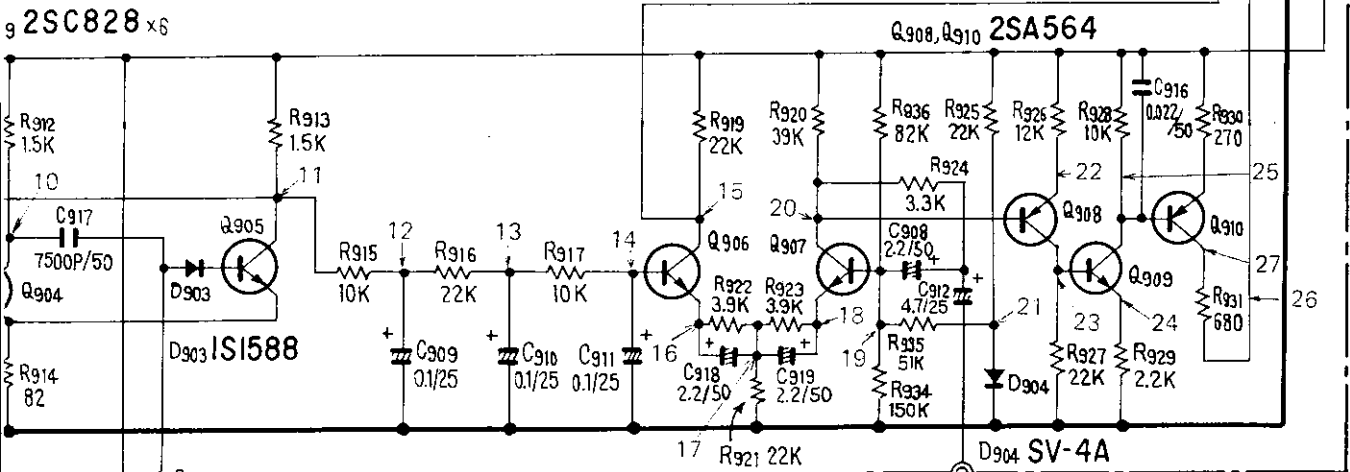
**NOTE:**

The voltage at each measure points are indicated on page 99.

R904  
1x4



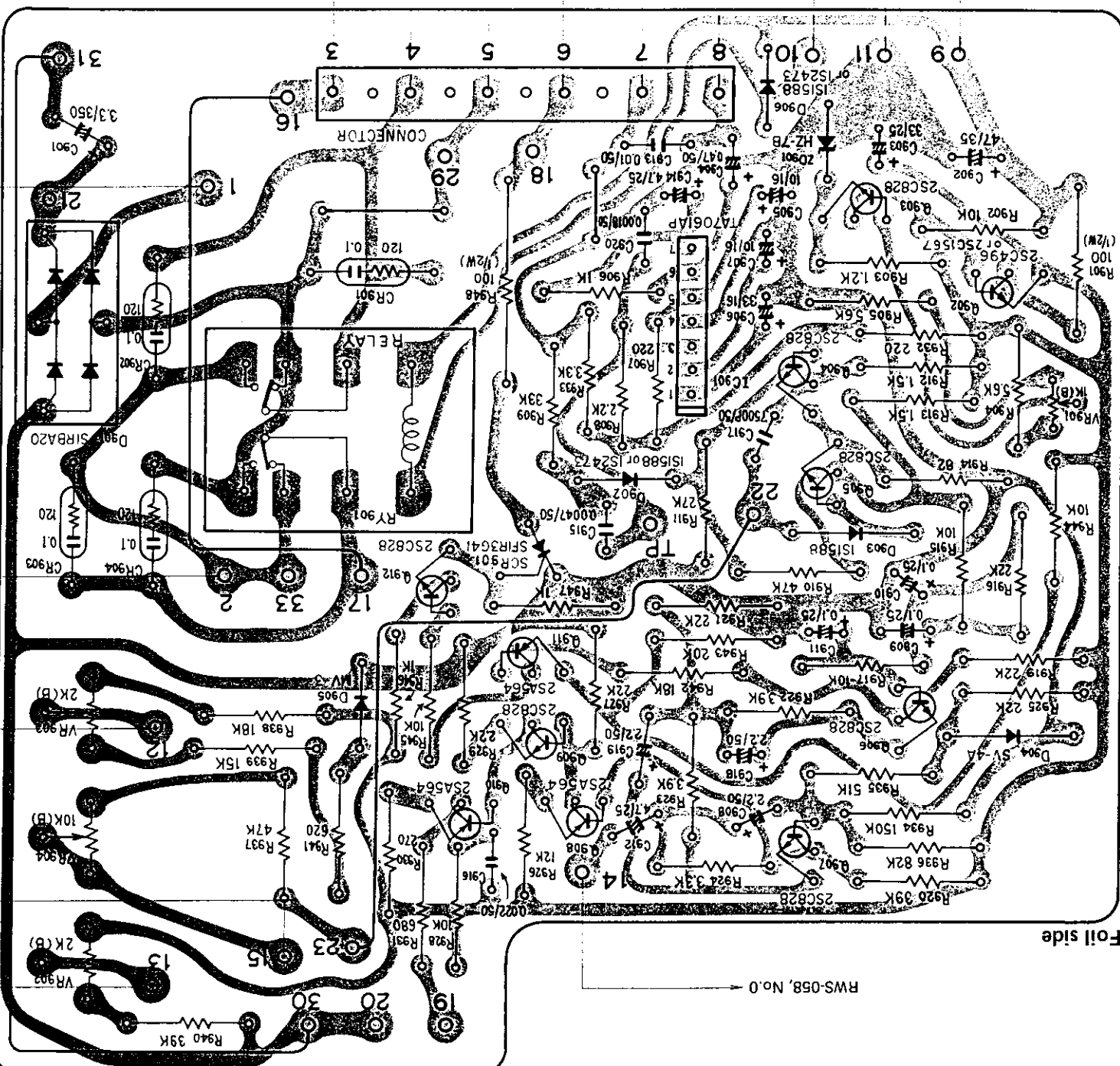
9 2SC828 x6



PITCH CONTROL  
10KΩ (B)  
REC  
ITCH

9.5cm/s 19cm/s

RWS-058, No. F  
RWS-058, No. G  
RWS-058, No. E

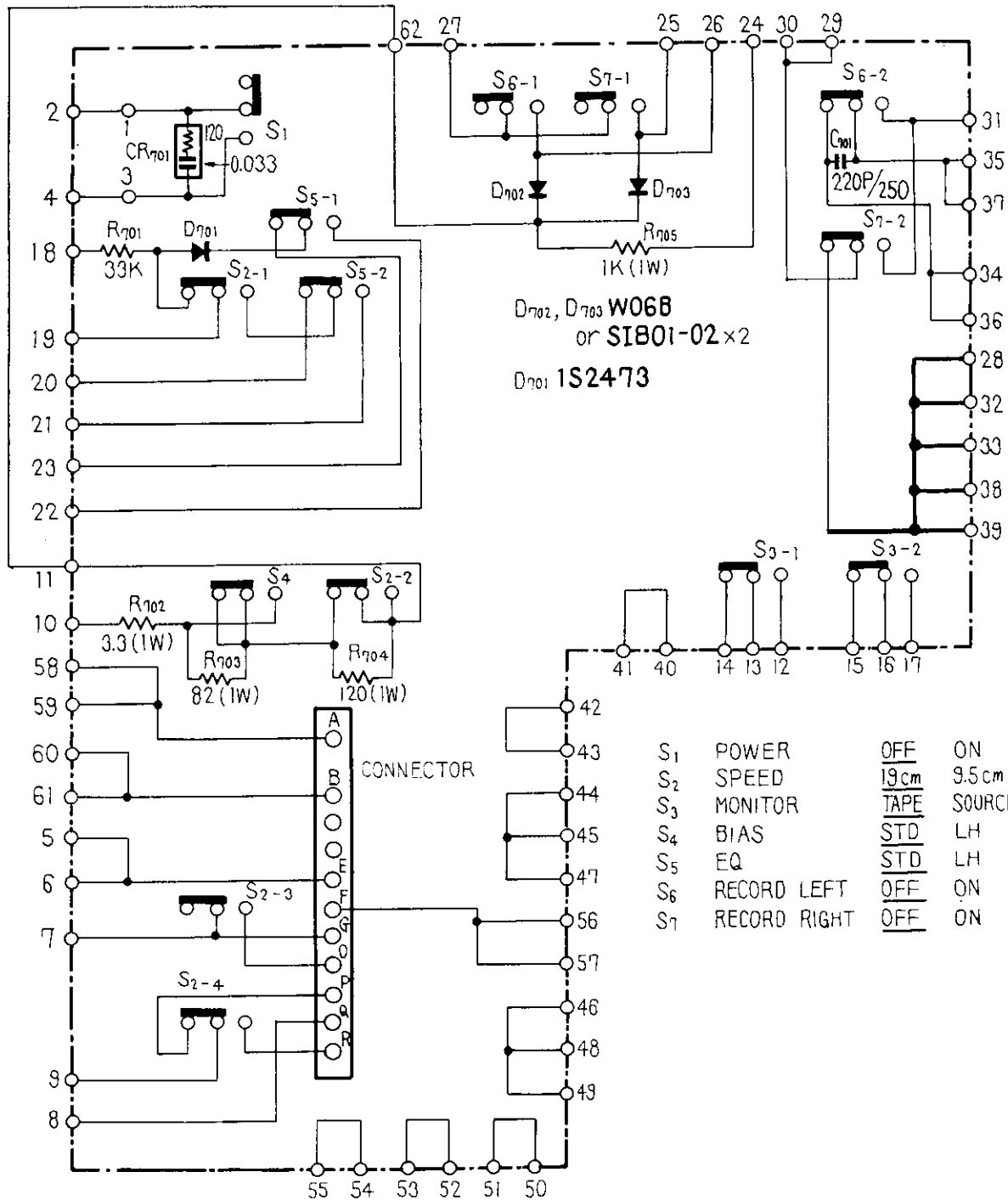


Foil side

RWS-058, No. 0

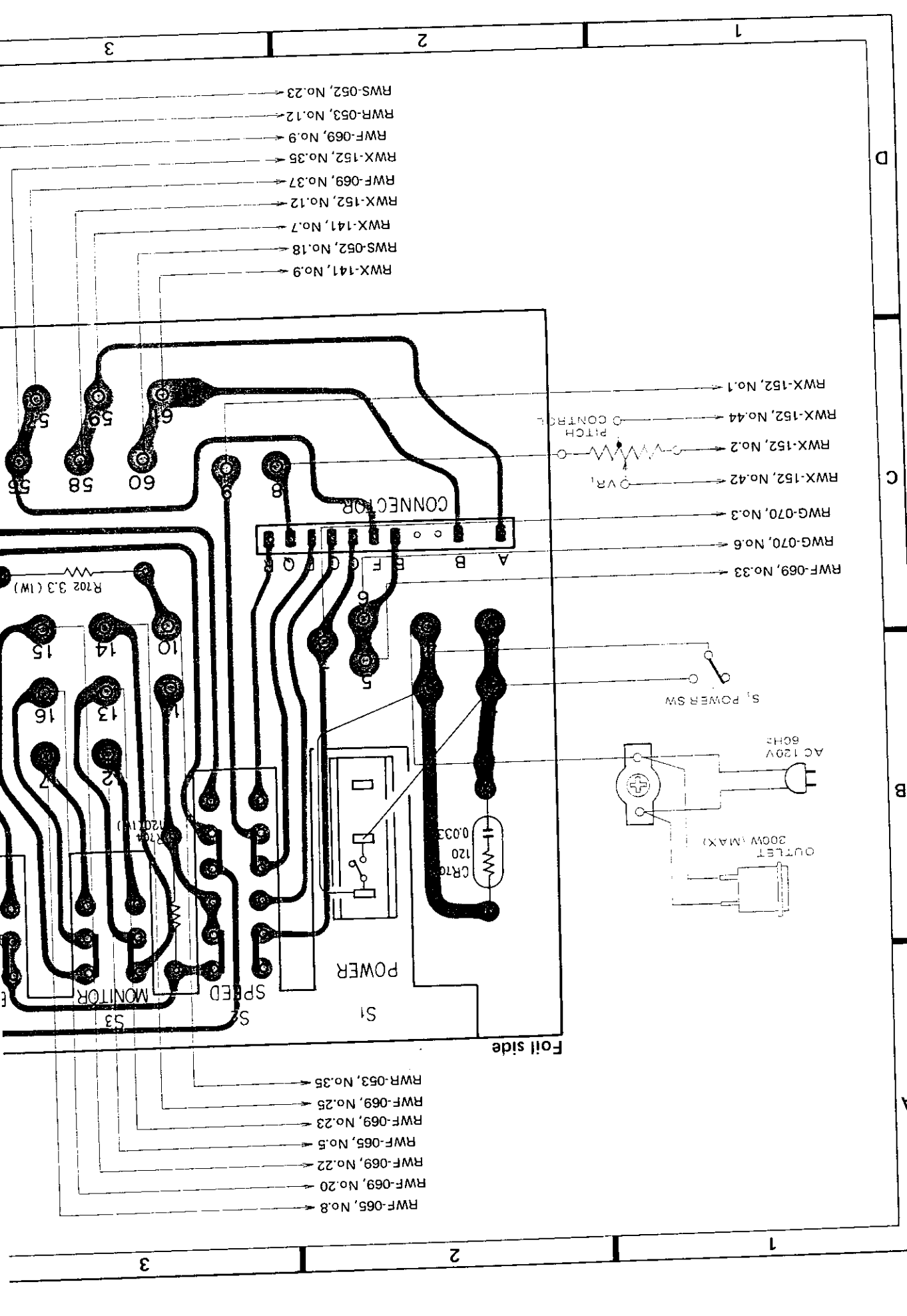


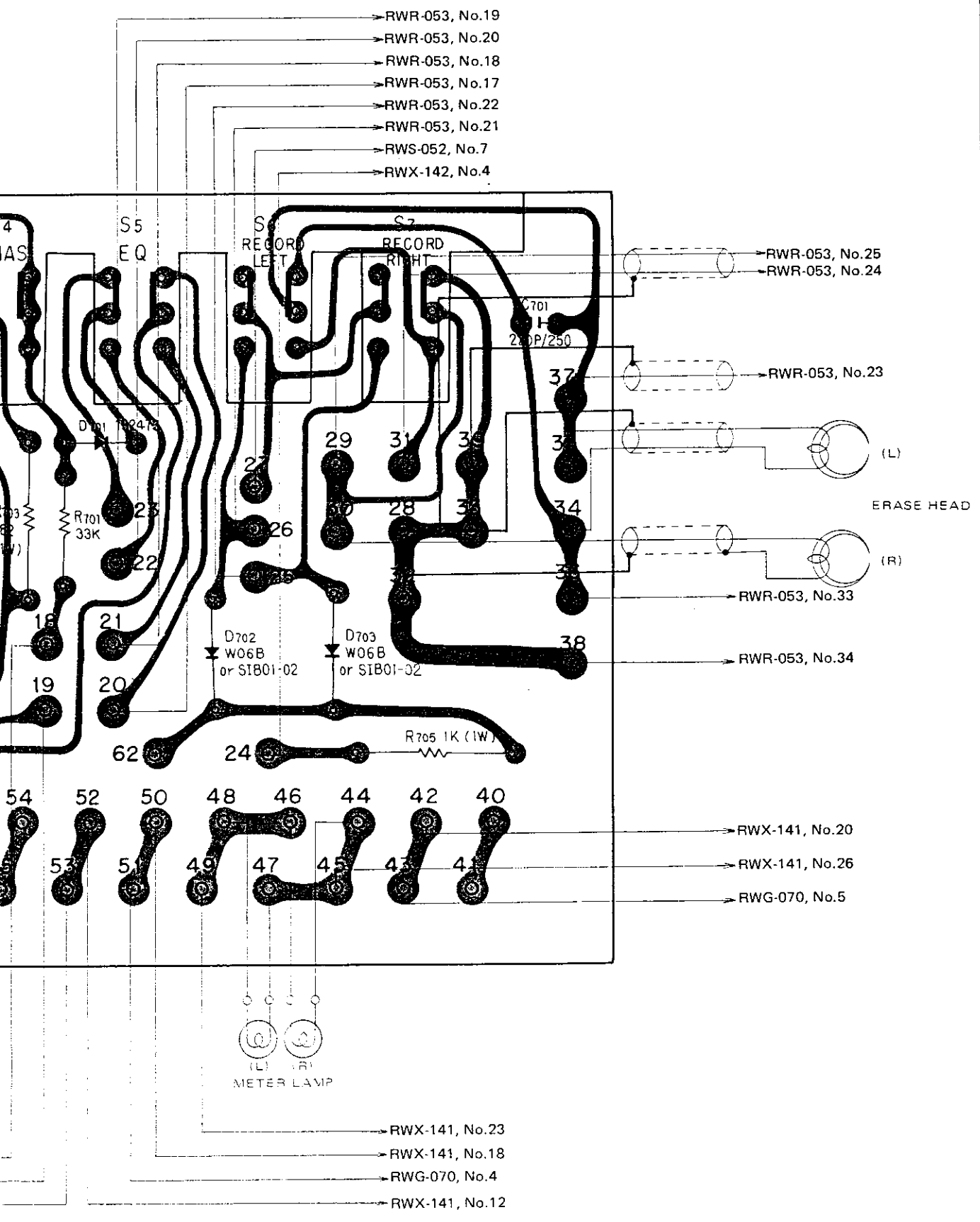
13.18 SWITCH ASSEMBLY (RWS-058 ..... KC type)  
(RWS-059 ..... KU type)



D702, D703 W06B  
or SIB01-02 x 2  
D701 1S2473

S1	POWER	<u>OFF</u>	ON
S2	SPEED	<u>19cm</u>	9.5cm
S3	MONITOR	<u>TAPE</u>	SOURCE
S4	BIAS	<u>STD</u>	LH
S5	EQ	<u>STD</u>	LH
S6	RECORD LEFT	<u>OFF</u>	ON
S7	RECORD RIGHT	<u>OFF</u>	ON





A

B

C

D