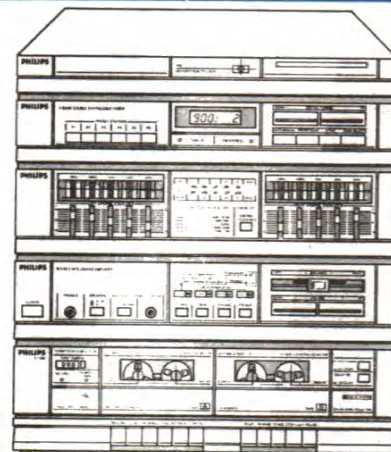
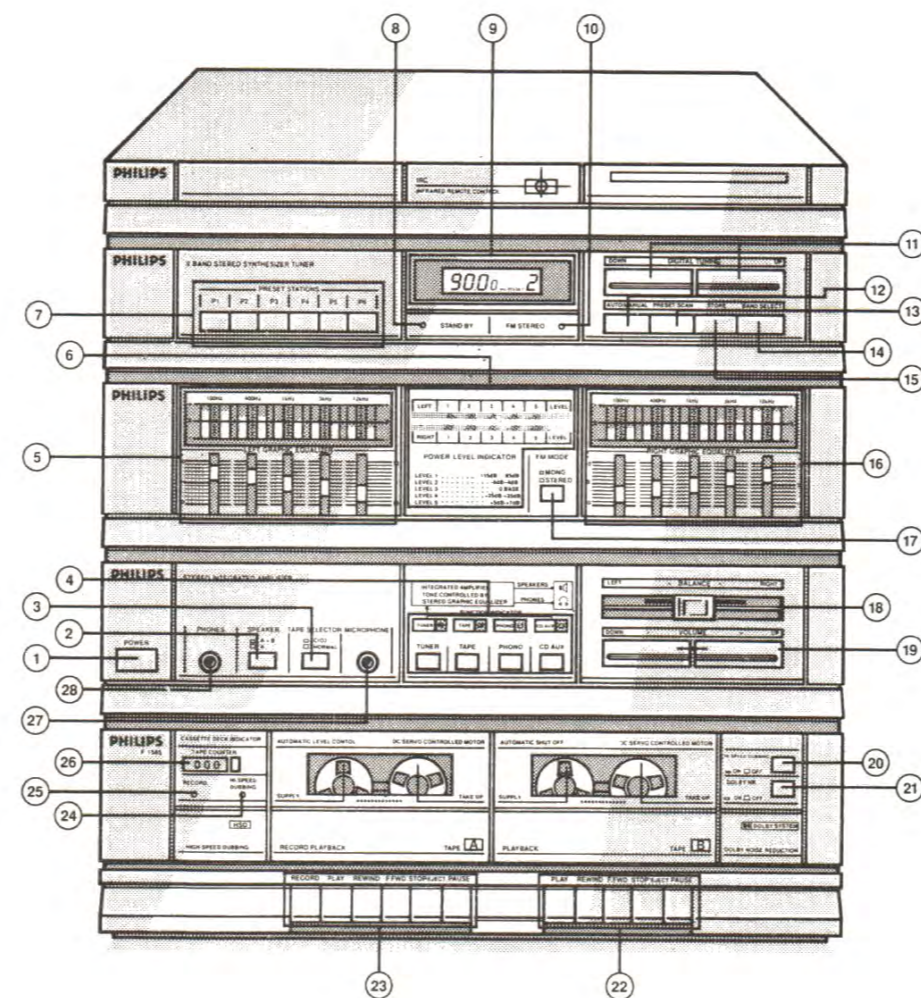


For servicing information regarding the cassette mechanism, refer to Service Manual: Recorder Tape Deck TN-21SW-1482



Location of Controls



- ① ON/OFF - press in to switch the unit on; press again to go to stand by
- ② SPEAKER selector -  $\blacktriangle$  for two pairs of speakers A+B;  $\blacktriangleright$  for one pair of speakers A only
- ③ TAPE selector -  $\blacktriangle$  for normal tapes;  $\blacktriangleleft$  for CrO2 tapes
- ④ FUNCTION selectors  
TUNER - for the radio  
TAPE - for the cassette player  
PHONO - for the record player  
CD/AUX - for a CD player or other external sources
- ⑤ LEFT GRAPHIC EQUALIZER - adjust the slide controls to suit your listening preference of the left speaker
- ⑥ POWER LEVEL indicator
- ⑦ PRESET STATIONS - for storing and recalling up to 6 AM and 6 FM stations in the memory
- ⑧ STAND BY indicator - lights up when the unit is in stand by
- ⑨ radio display
- ⑩ FM STEREO indicator - lights up on reception of an FM stereo broadcast
- ⑪ TUNING - press UP to tune towards the higher end of the selected band and press DOWN to tune towards the lower end of the selected band
- ⑫ AUTO/MANUAL - choose between automatic or manual tuning
- ⑬ PRESET SCAN - to tune to an other preset station
- ⑭ BAND SELECT - to select AM or FM band
- ⑮ STORE - to store your selected stations (6 on AM and 6 on FM)
- ⑯ RIGHT GRAPHIC EQUALIZERS - adjust the slide controls to suit your listening preference of the right speaker
- ⑰ FM MODE -  $\blacktriangle$  for stereo reception;  $\blacktriangleleft$  for mono reception
- ⑱ BALANCE - to adjust the balance of the volume between left and right speaker
- ⑲ VOLUME - to adjust the volume
- ⑳ HI-SPEED DUBBING - press to make a high speed copy from deck B to deck A
- ㉑ DOLBY NOISE REDUCTION - to cut out high frequency noise
- ㉒ deck B keyboard, for playback only  
PLAY - to start playback  
REWIND - to fast rewind the tape  
F.FWD - to fast forward the tape  
STOP/EJECT - to stop playback and to open the cassette door  
PAUSE - for brief interruptions
- ㉓ deck A keyboard, recording and playback  
RECORD - for recording  
PLAY - to start playback  
REWIND - to fast rewind the tape  
F.FWD - to fast forward the tape  
STOP/EJECT - to stop playback and to open the cassette door  
PAUSE - for brief interruptions
- ㉔ HI-SPEED DUBBING indicator - lights up when making a tape copy at high speed
- ㉕ RECORD indicator - lights up when recording
- ㉖ TAPE COUNTER with zero reset button, deck A
- ㉗ input socket for MICROPHONE
- ㉘ PHONES socket for stereo headphones

SPECIFICATION  
GENERAL

	NOMINAL VALUE	TYPICAL VALUE
Mains voltage	: 120/220/240V	: 120/220/240V
Mains frequency	: 50 Hz	: 50 Hz
Power consumption	: 20W max	: 20W max
Dimensions (WxHxD)	: 16"1/2 x 17"1/8 x 13"1/2	
Weight	: 10 kg	

TUNER. FM SECTION

Tuning range	: 87.5 MHz to 108.5 MHz	: 87.5 MHz to 108.5 MHz
Aerial inputs	: 75 ohm BALANCED	: 75 ohm BALANCED
Sensitivity	: 2uV 26dB quieting	: 4uV 26dB quieting
Suppression IF-AM	: 33dB	: 30dB

DISTORTION T.H.D.

Signal/noise ratio	Stereo	: 0.35%	: 0.7%
	Mono	: 50dB	: 45dB

TUNER. AM SECTION

Wave ranges	MW	: 531 KHz to 1602 KHz	: 536 KHz to 1607 KHz
IF rejection	MW	: 28dB at 600 KHz	: 25dB at 600 KHz
20dB Quieting Sensitivity	MW	: 400uV/m	: 800uV/m

AMPLIFIER

10% T.H.D. Output Power		: 33W	: 30W
Distortion T.H.D.		: 0.3%	: 0.5%
Frequency characteristic			
Bass control		: +6 ~ -10dB +9 ~ -9dB	: ±3dB
Terble control		: +6 ~ -10dB +9 ~ -9dB	: ±3dB

CASSETTE SECTION

Tape speed		: 17/8 IPS (4.75cm P.S)	: ±2%
Wow & Flotter			
S/N ratio		: 0.15%	: 0.35%
Separation		: 50dB	: 45dB
Dolby NR section		: 35dB	: 30dB
Noise reduction (Phono)		: -	: 8.5dB
Bias leakage		: -	: 0.5dB

PHONO SECTION

Input impedamce		: 470K ohm	: 470K ohm
Speed		: 33 1/3 - 45 t/min	: 33 1/3 - 45 t/min
Wow & Flutter		: 0.3%	: 0.3%

TABLE OF CONTENTS

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# ALIGNMENT

General:

1. Signal input must be as low as possible to avoid overload and clipping. (Use highest sensitivity of output indicator.)
2. Volume control at maximum, balance and tone controls at mechanical center.
3. Standard modulation is 400 Hz at 30% amplitude for AM. 1000 Hz at 22.5 kHz deviation for FM.
4. Connect 8 ohm load across speaker jack.

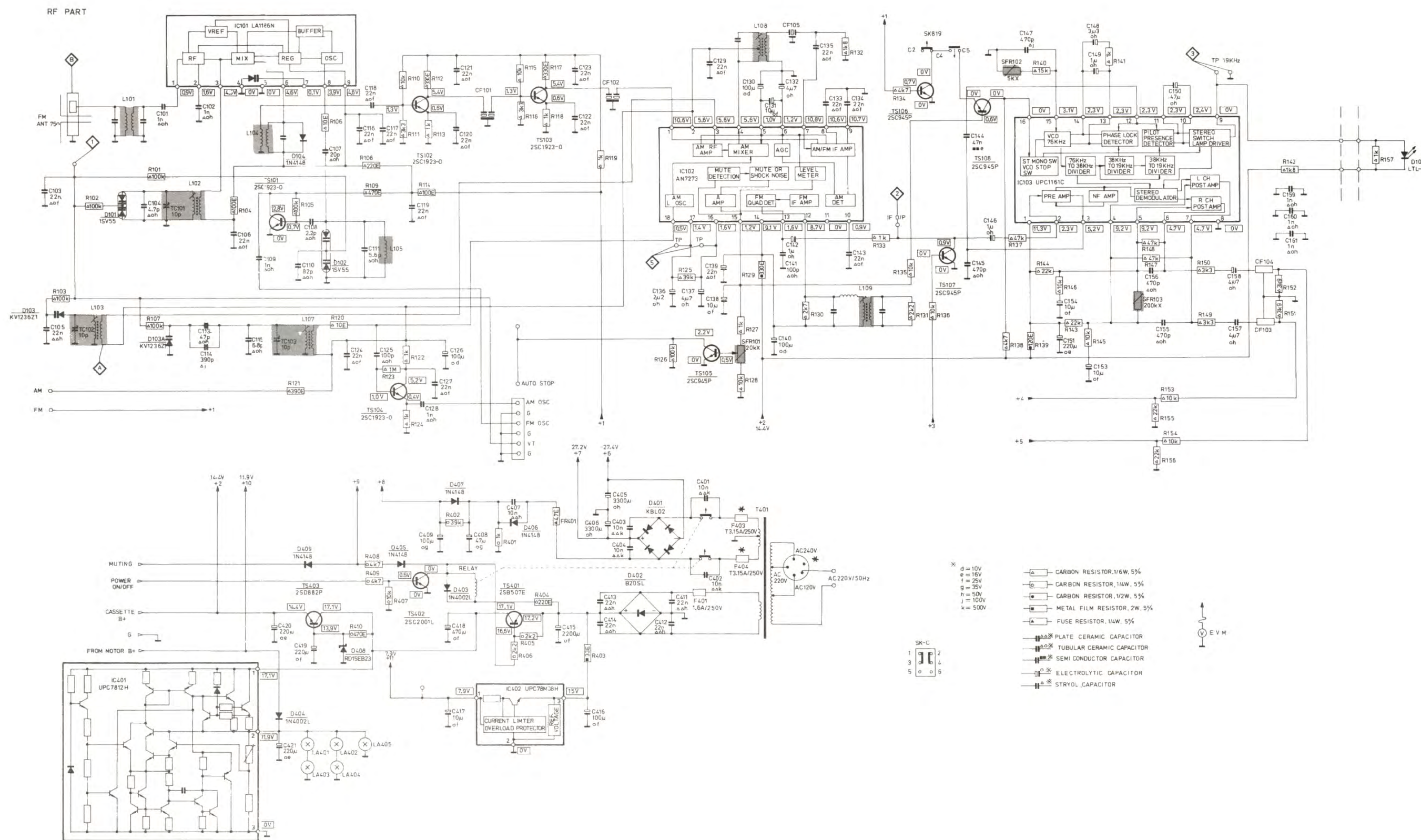
Equipment required:

1. AM signal generator
2. FM signal generator
3. V.M.
4. Frequency counter

# Schematic Diagram

## Radio Alignment

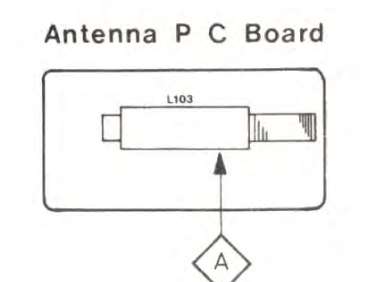
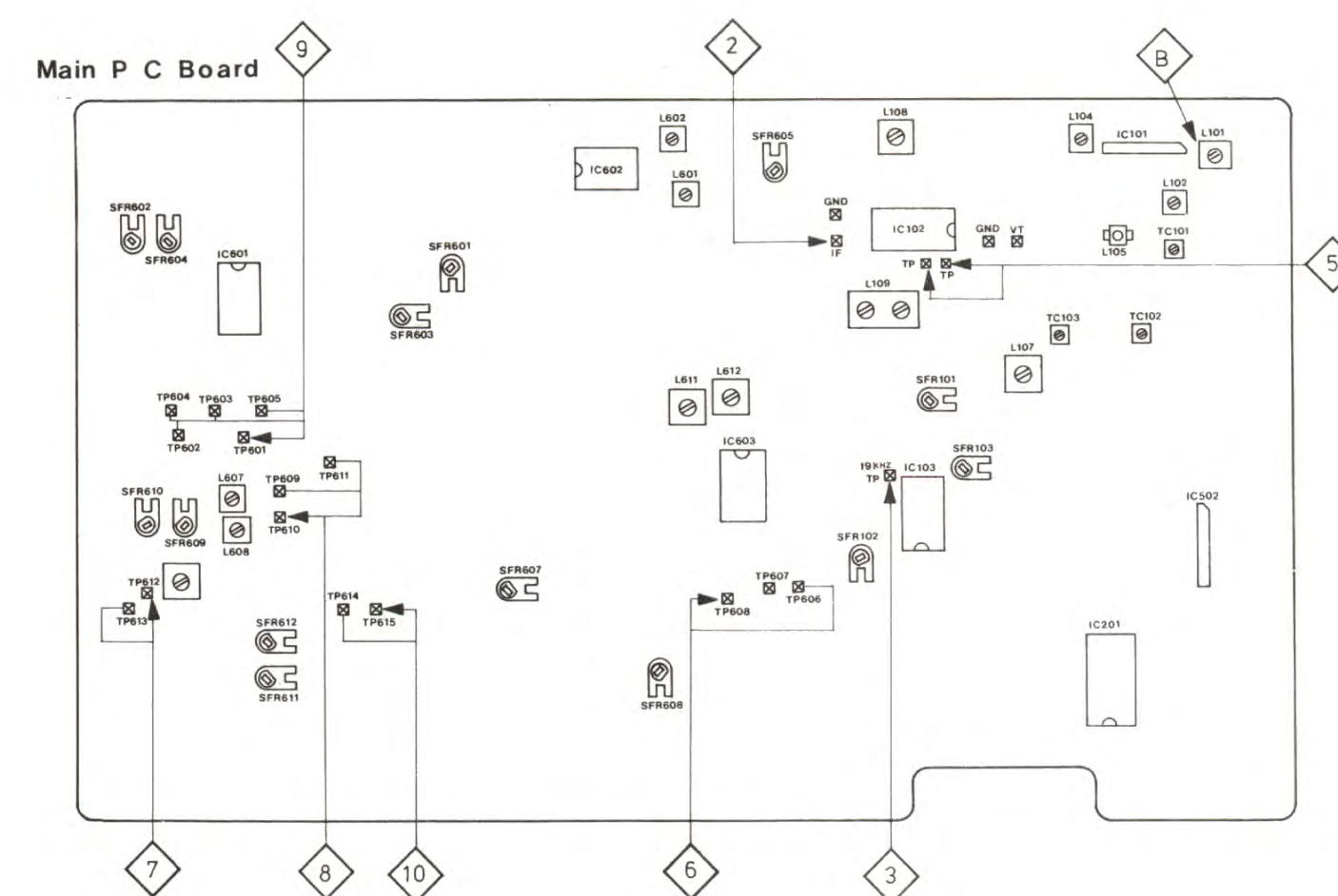
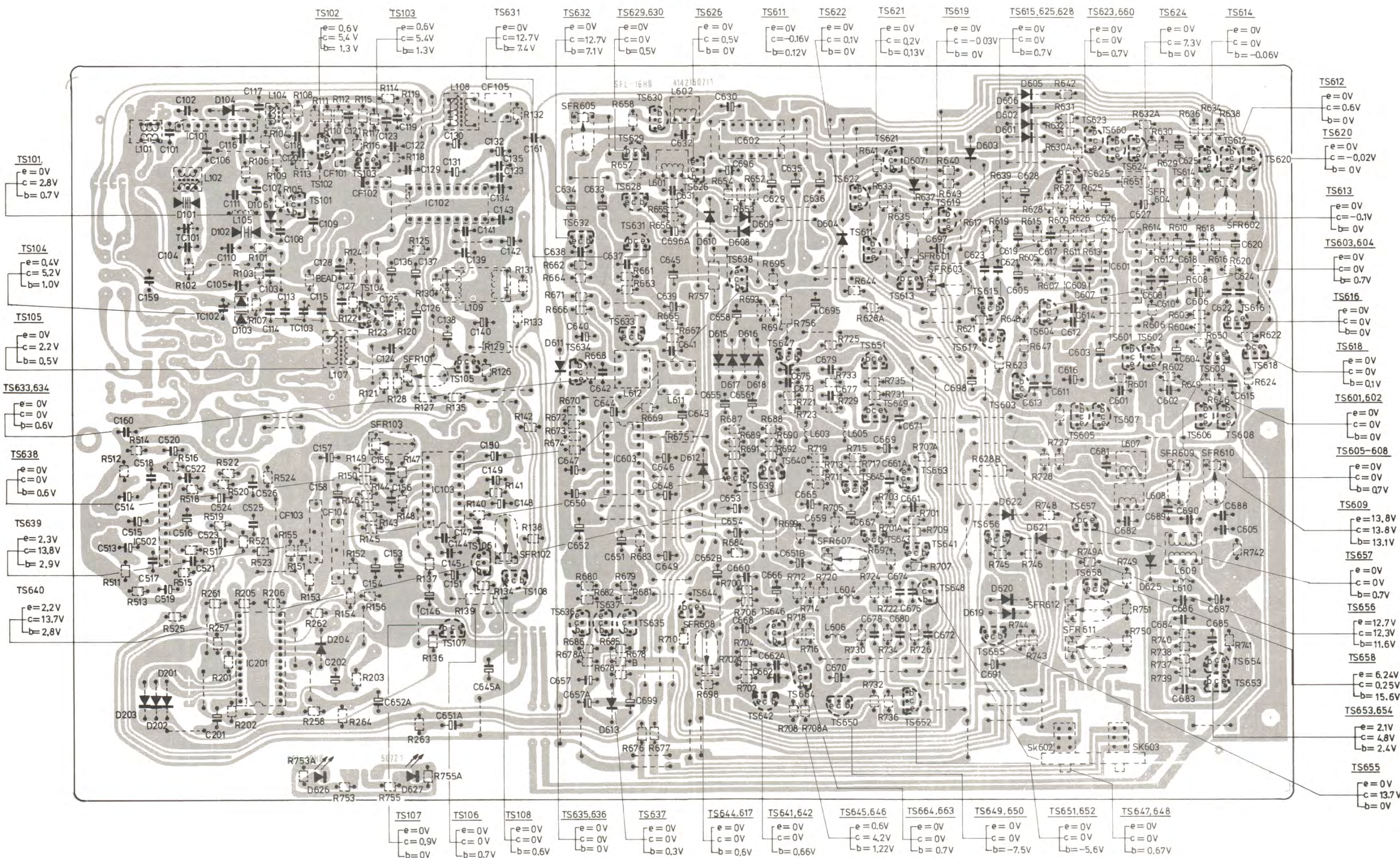
SK.....A	Signal	to	Tune in	adjust	
AM	450 kHz	A		L108	MAX. 2
AM	531 kHz 1602 kHz 603 kHz 1404 kHz	A	MAX CAP MIN CAP 603 kHz 1404 kHz	L107 TC103 L103 TC102	VT=1.0V±0.1V VT=7.0V±0.1V MAX. 4 1
FM	10.7 MHz	B		L104	MAX. 2
FM	87.5 MHz 108 MHz 90 MHz 106 MHz	B	MAX CAP MIN CAP 90 MHz 106 MHz	L105 L102 TC101	VT=1.1V±0.1V 7.5V MAX. 1 4
FM	98 MHz	B		SFR102	COUNTER 19 kHz MAX. 5
FM T.H.D	NO SIGNAL	B		L109 R L	VT=0V±.05V DISTORTION TO MIN. 5
FM AUTO TUNING	26 db SIGNAL	B		SFR101	LOCK SENS. =28db±4db 1
FM SEPAR- ATION		B		SFR103	MAX. 1



\* only for -/01/25

P C Board-Solder Side

Adjustment Locations



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
IC101	0.9V	1.6V	4.5V	0V	0V	4.6V	0.1V	3.9V	4.6V																				
IC102 AM	10.6V	5.6V	5.6V	5.6V	1.0V	1.2V	10.8V	10.6V	10.7V	10.3V	0V	1.3V	2.0V	11.2V	0.4V	1.5V	1.5V	5.6V											
FM	8.7V	0.5V	0.5V	0.5V	0V	0.3V	8.6V	8.6V	8.6V	0.9V	0V	8.7V	1.6V	9.1V	1.2V	1.6V	1.4V	0.5V											
IC103	11.3V	2.3V	5.2V	9.2V	9.2V	4.7V	4.7V	0V	0V	2.4V	2.3V	2.3V	2.3V	3.1V	0V														
IC201	7.7V	0V	4.3V	0V	0V	0V	7.6V	7.6V	0V	0V	0V	0V	0V	0V	0V	1.7V	1.9V	0V	1.8V	0V	0V	0V	0V	0V	0V	0V	0V	0V	7.9V
IC502	1.2V	0.7V	5.9V	6.9V	0V	12.8V	6.25V	0.7V	12V																				
IC601	9.0V	2.2V	0V	2.2V	2.2V	2.2V	2.2V	0V	2.2V	2.2V	2.2V	2.2V	2.2V	0V	2.2V														
IC602	0.1V	0V	0V	13.2V	0V	0V	0V	0V	0V	0V	0.5V	0.5V	13.8V																
IC603	6.7V	13.1V	6.7V	6.7V	0V	6.7V	0.8V	6.7V	6.7V	0.8V	6.7V	0V	1.2V	5.7V	0V	6.7V													

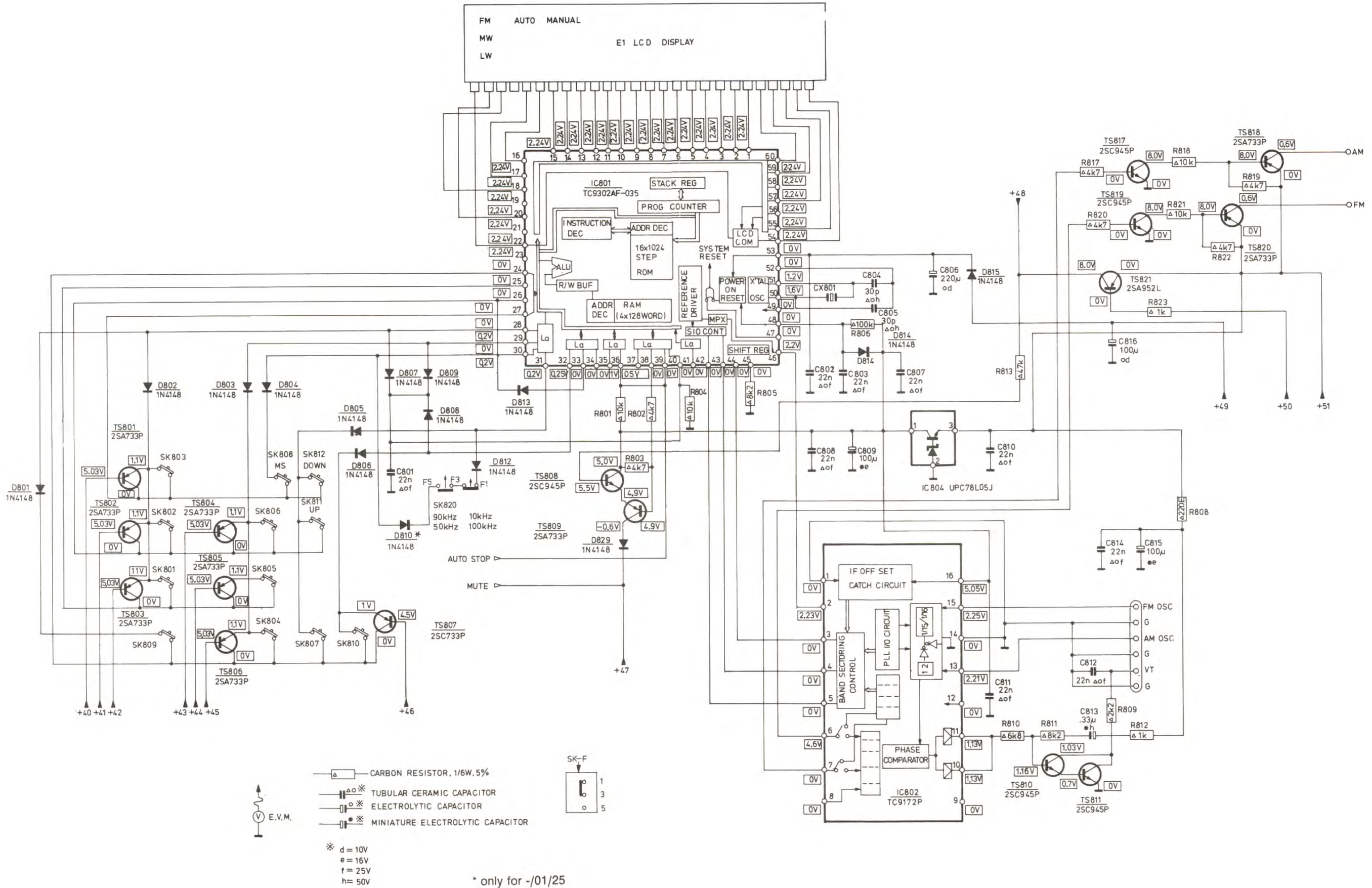
Note: Values indicated in □ are DC Voltages between the chassis ground and the electrical parts.

\* only for -/01/25



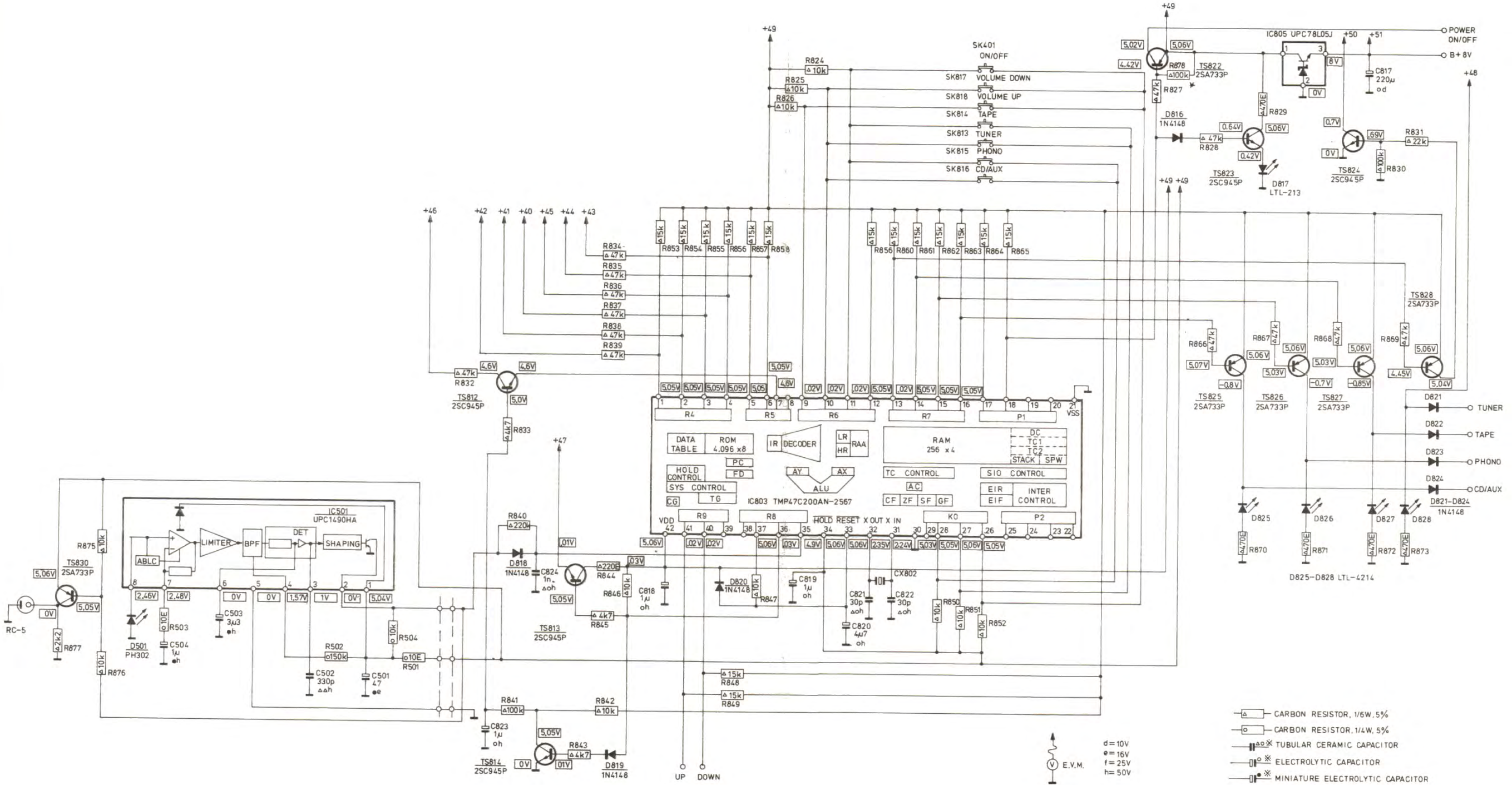
# Schematic Diagram

PLL & REMOTE CIRCUIT



# Schematic Diagram

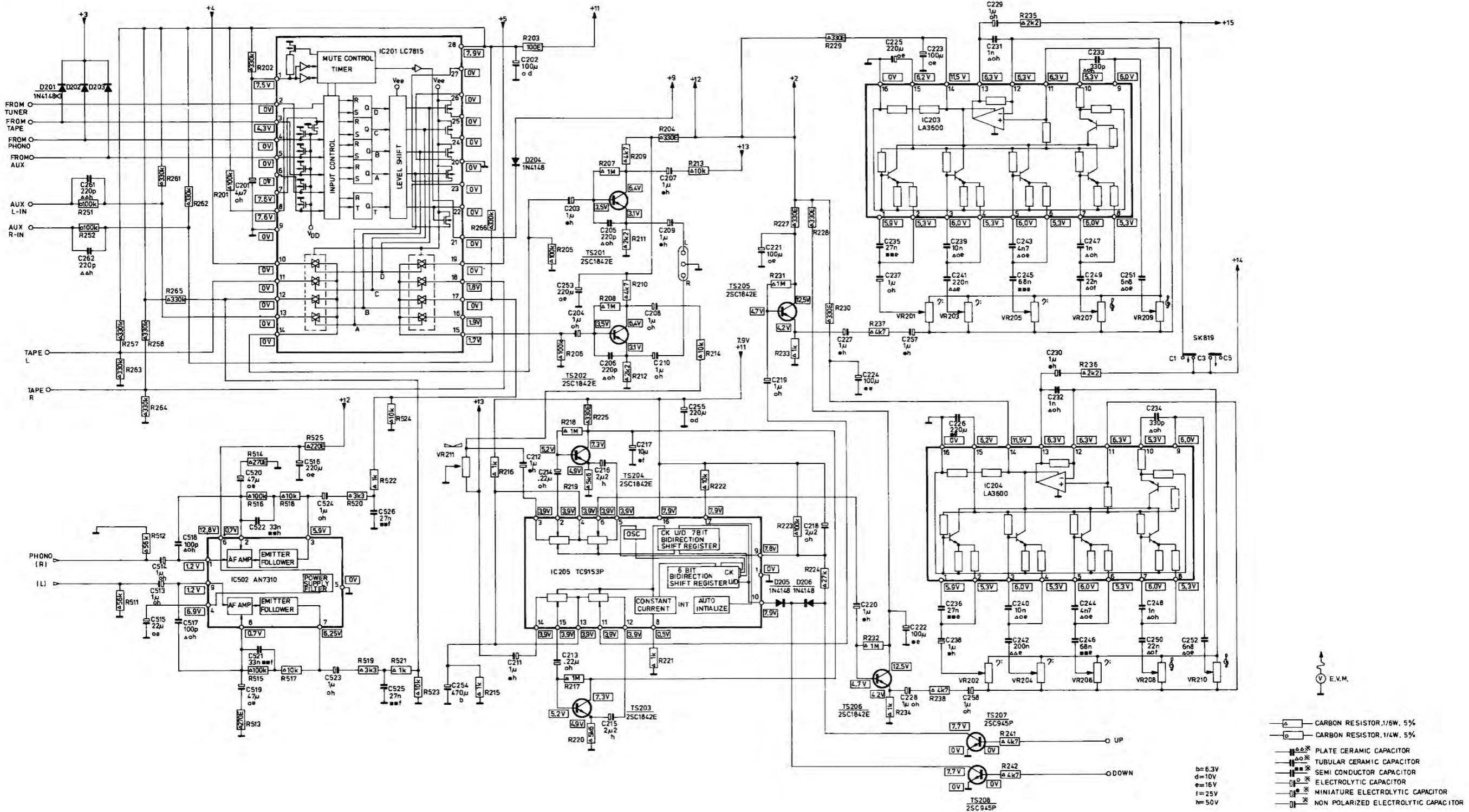
AF PART



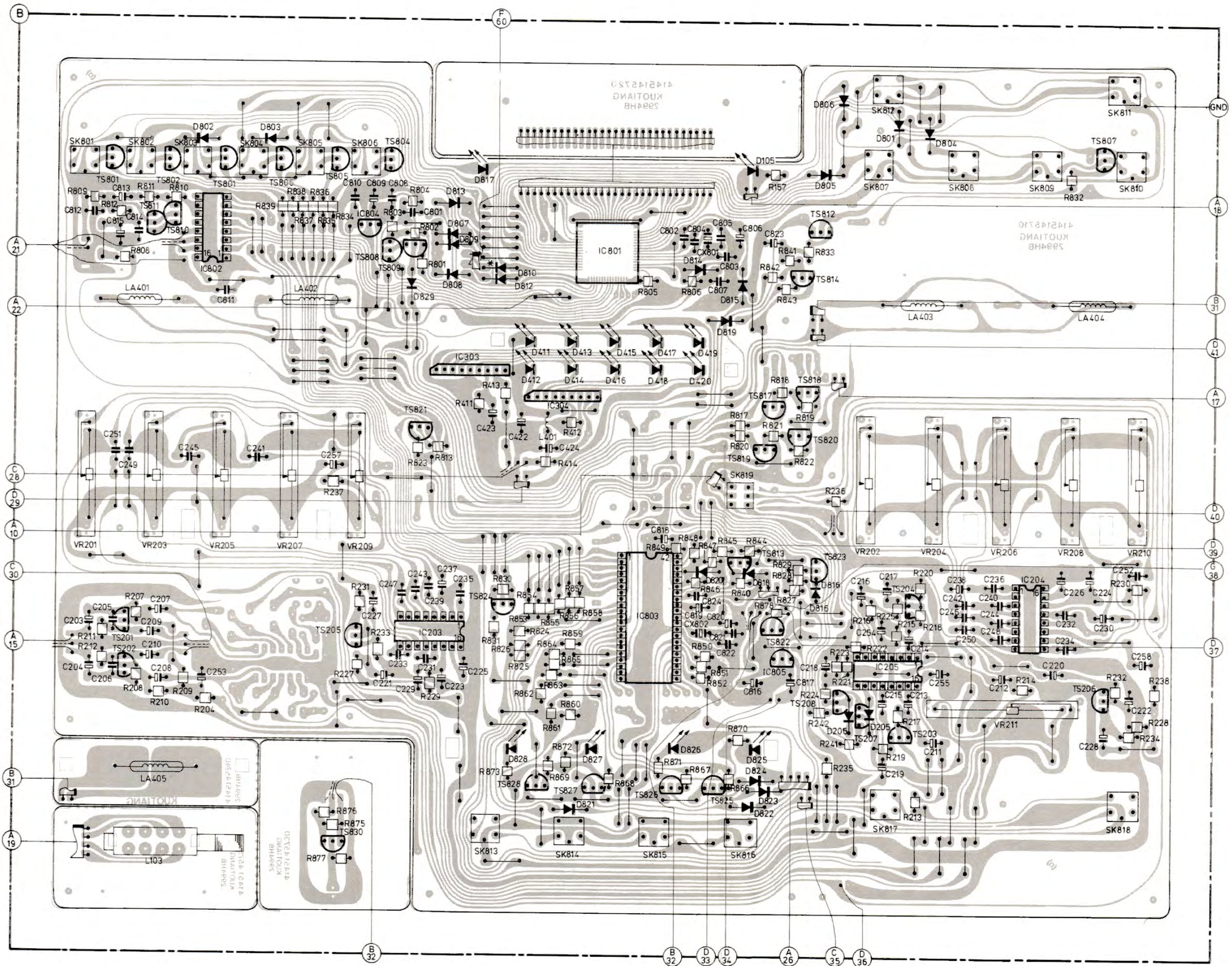
\* only for -/01/25

# Schematic Diagram

AF PART



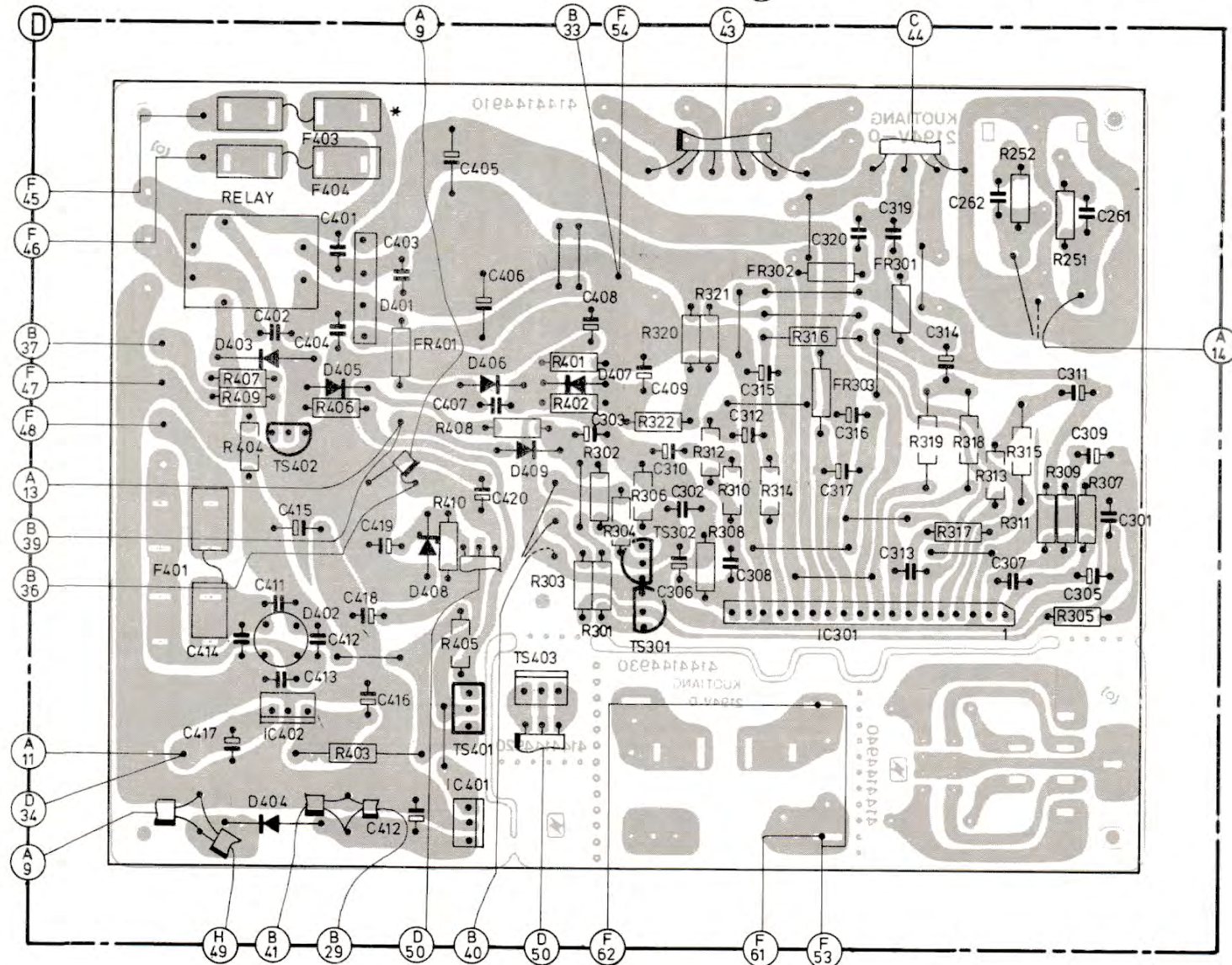
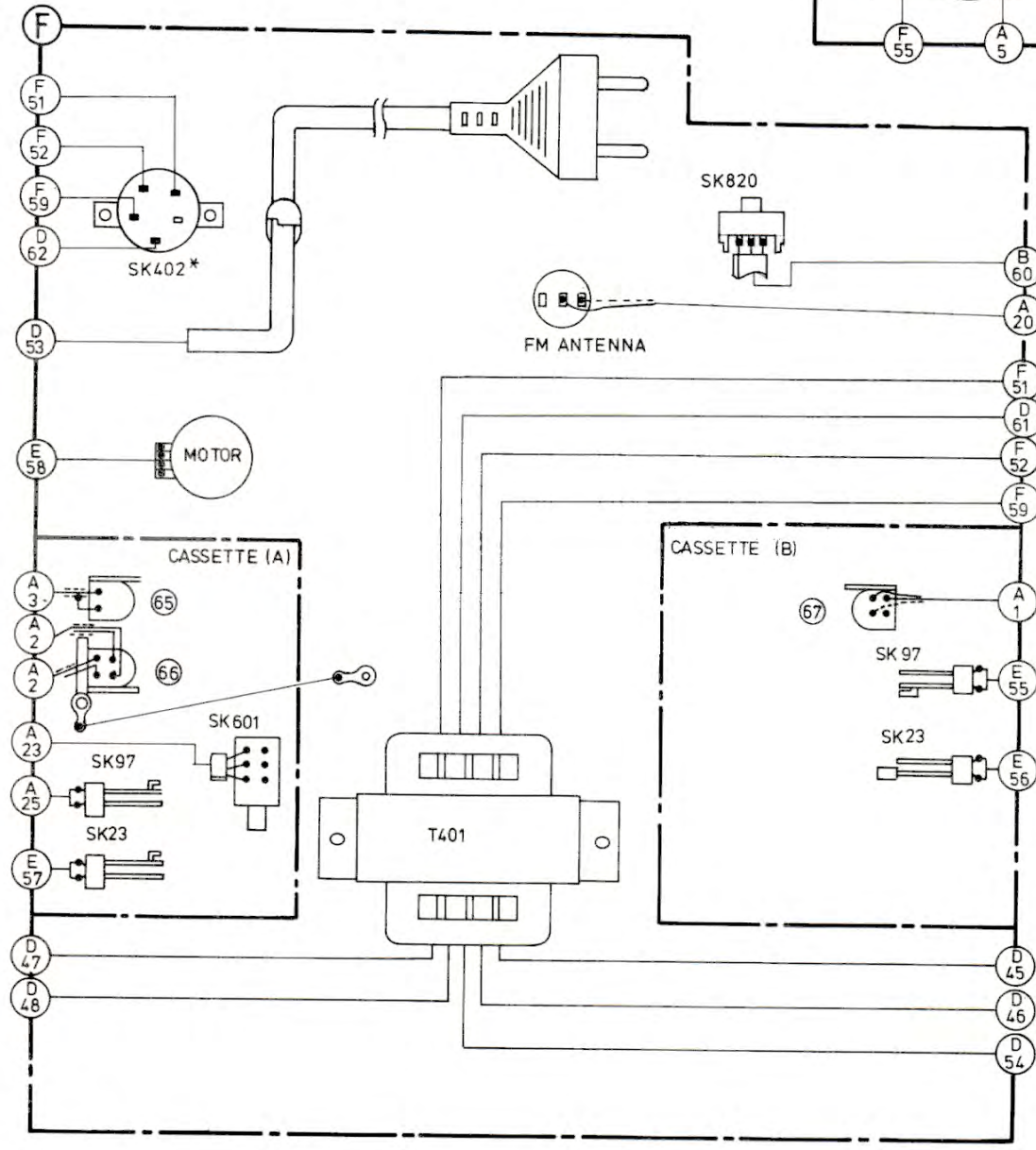
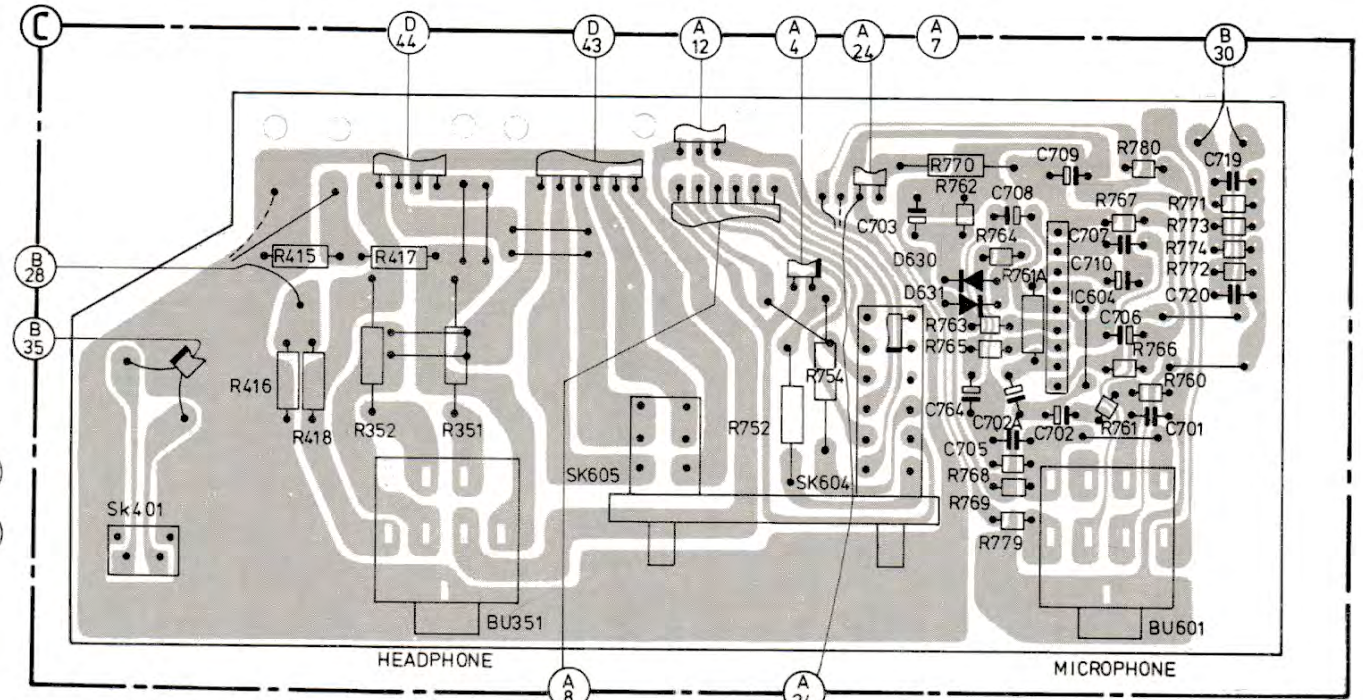
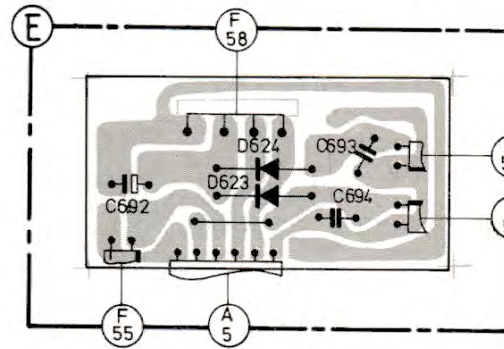
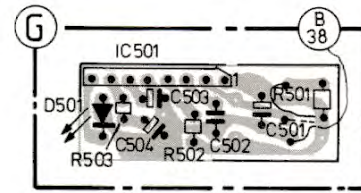
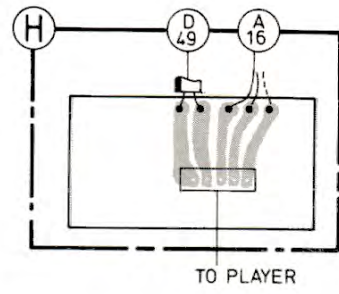
# Wiring Diagram



\* only for -/01/25

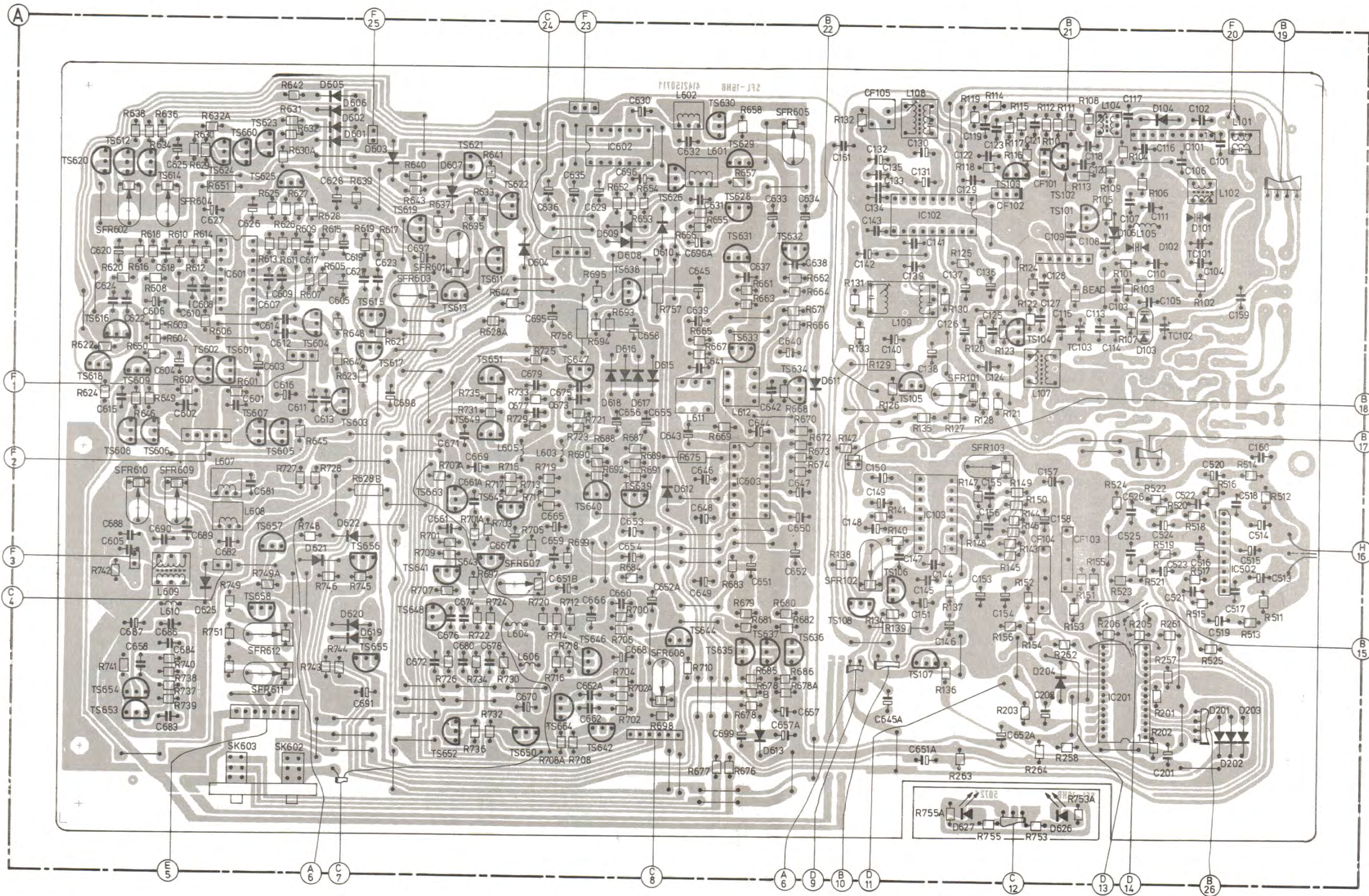


# Wiring Diagram



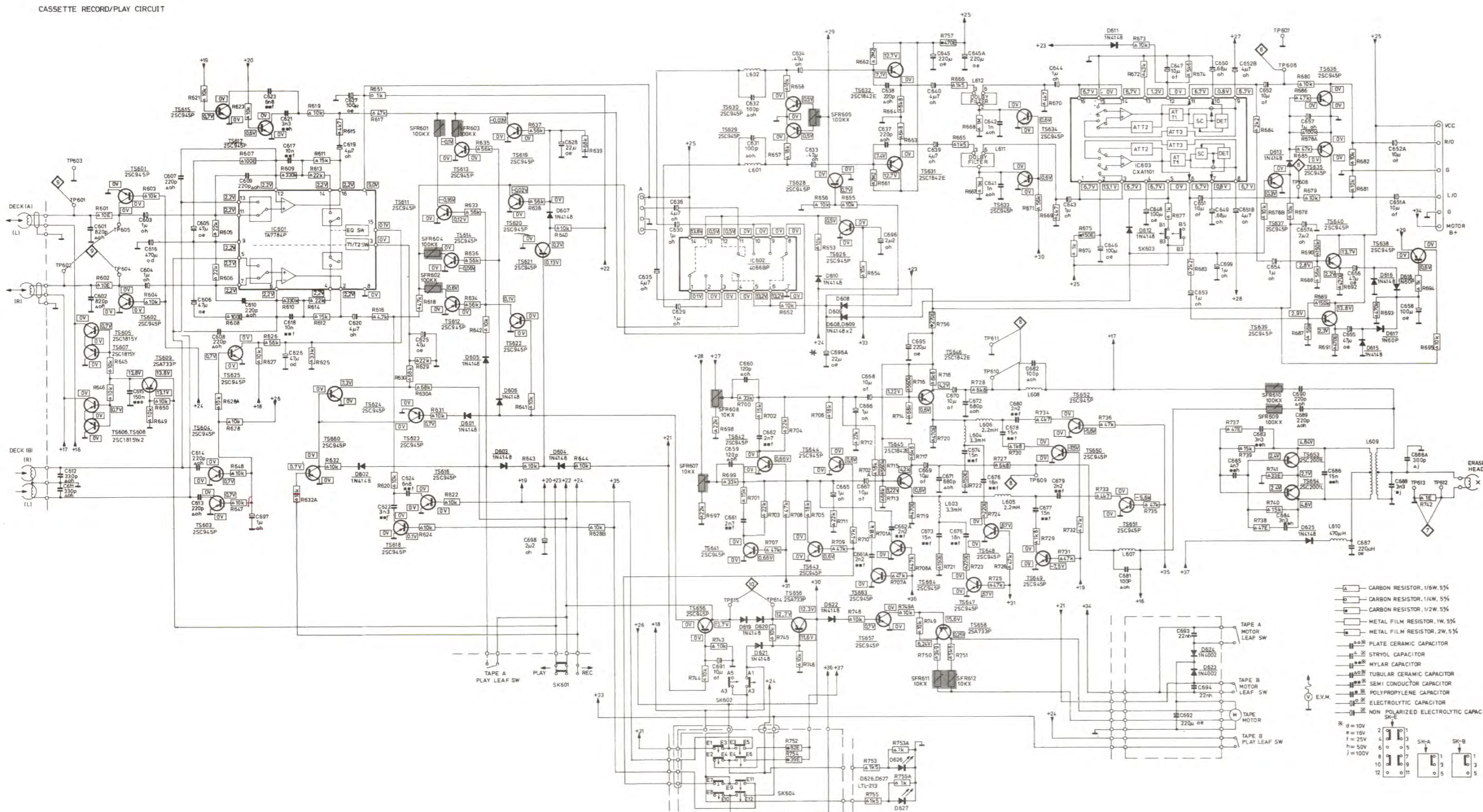
\* only for -/01/25

# Wiring Diagram



\* only for -/01/25

### Schematic Diagram



\* only for -/01/25

### CASSETTE ALIGNMENT & SPEC

HEAD ANGLE	TEST TAPE SBC 4	PLAYBACK	HEAD ANGLE SCREW	MAX. 5
HIGH SPEED	TEST TAPE SBC 4	PLAYBACK	SFR612	COUNTER 6,3 kHz ± 2% 10
NORMAL SPEED	TEST TAPE	PLAYBACK	SFR611	COUNTER 3,15 kHz ± 30 Hz 5
DOLBY LEVEL	TEST TAPE SBC 420 315 Hz 0 dB	PLAYBACK	CASS. DECKA SFR601L SFR602R CASS. DECKB SFR603L SFR604R	OUTPUT= 630 mV 6
BIAS FREQUENCY	NO SIGNAL	RECORD	L109	f=140 KHz 7
BIAS LEAKAGE	NO SIGNAL	RECORD	L607 L608	OUTPUT=30mV 8
DOLBY FILTER	AUX I/P 19 KHz SIGNAL	RECORD	L612 L611	OUTPUT TO MIN 5
R/P LEVEL	TEST TAPE SBC 420 SIDE 2	RECORD	SFR607L SFR608R	OUTPUT=200mV 6
BIAS CURRENT	NO SIGNAL	RECORD	SFR609 SFR610	OUTPUT=42mV 9

- CARBON RESISTOR, 1/8W, 5%
  - CARBON RESISTOR, 1/4W, 5%
  - CARBON RESISTOR, 1/2W, 5%
  - METAL FILM RESISTOR, 1W, 5%
  - METAL FILM RESISTOR, 2W, 5%
  - PLATE CERAMIC CAPACITOR
  - STRYOL CAPACITOR
  - NYLAR CAPACITOR
  - TUBULAR CERAMIC CAPACITOR
  - SEMI CONDUCTOR CAPACITOR
  - POLYPROPYLENE CAPACITOR
  - ELECTROLYTIC CAPACITOR
  - NON POLARIZED ELECTROLYTIC CAPACITOR
- \* d = 10V  
 # = 16V  
 f = 25V  
 h = 50V  
 j = 100V

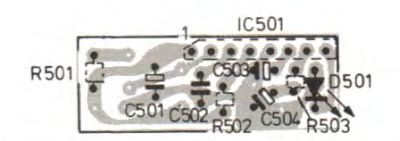
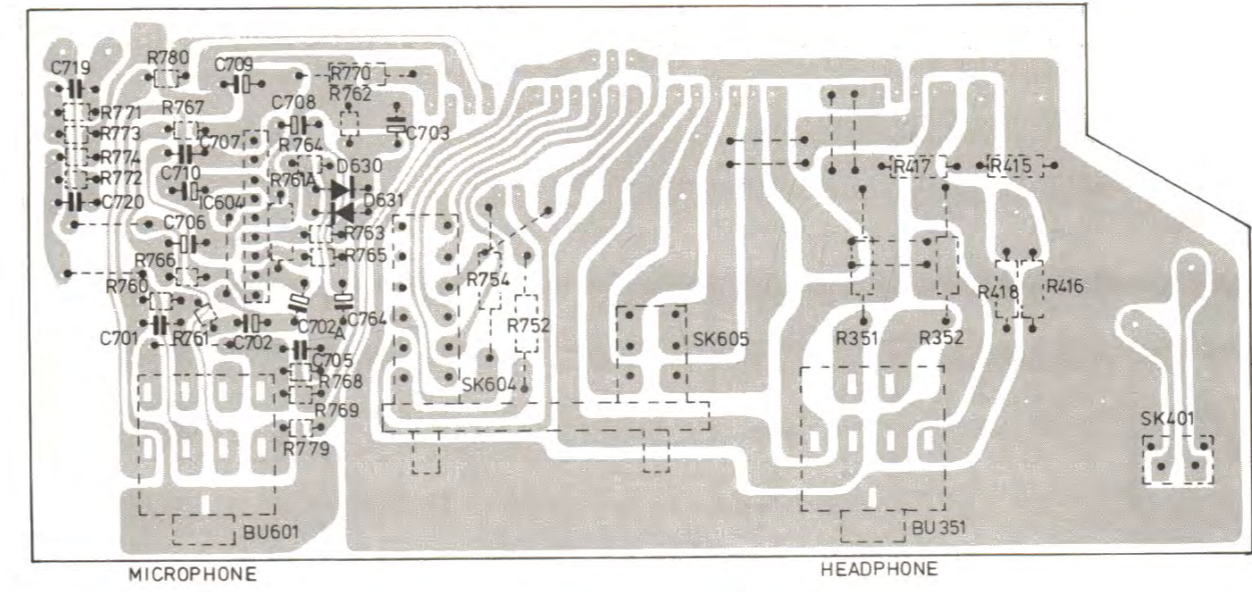
MECHANICAL PARTS EXPLODED VIEW A+B

M1	4822 410 26657
M2	4822 450 61264
M3	4822 492 70045
M4	4822 450 61266
M5	4822 443 62543
M6	4822 411 61529
M7	4822 380 30262
M8	4822 411 61528
M9	4822 450 61265
M10	4822 443 62542
M11	4822 450 61263
M12	4822 450 61262
M13	4822 450 61261
M14	4822 450 61259
M15	4822 450 61258
M16	4822 426 51306
M17	4822 410 26353
M18	4822 410 26352
M19	4822 410 26354
M20	4822 410 26663
M21	4822 528 20472
M23	4822 410 26658
M26	4822 410 26662
M27	4822 358 30867
M28	4822 410 26659
M29	4822 349 50327
M30	4822 404 20994
M32	4822 466 92276
M33	4822 256 30374
M34	4822 450 81114
M35	4822 380 20315
M37	4822 410 26661
M38	4822 404 20996
M40	4822 404 20993
M41	4822 255 40878
M43	4822 466 92277
M44	4822 404 20995
M50	4822 462 41283
M51	4822 265 20398
M53	4822 532 51847
M54	4822 264 30247
M55	4822 462 71461
M58	4822 264 30246
M59	4822 265 40738
M60	4822 218 10231

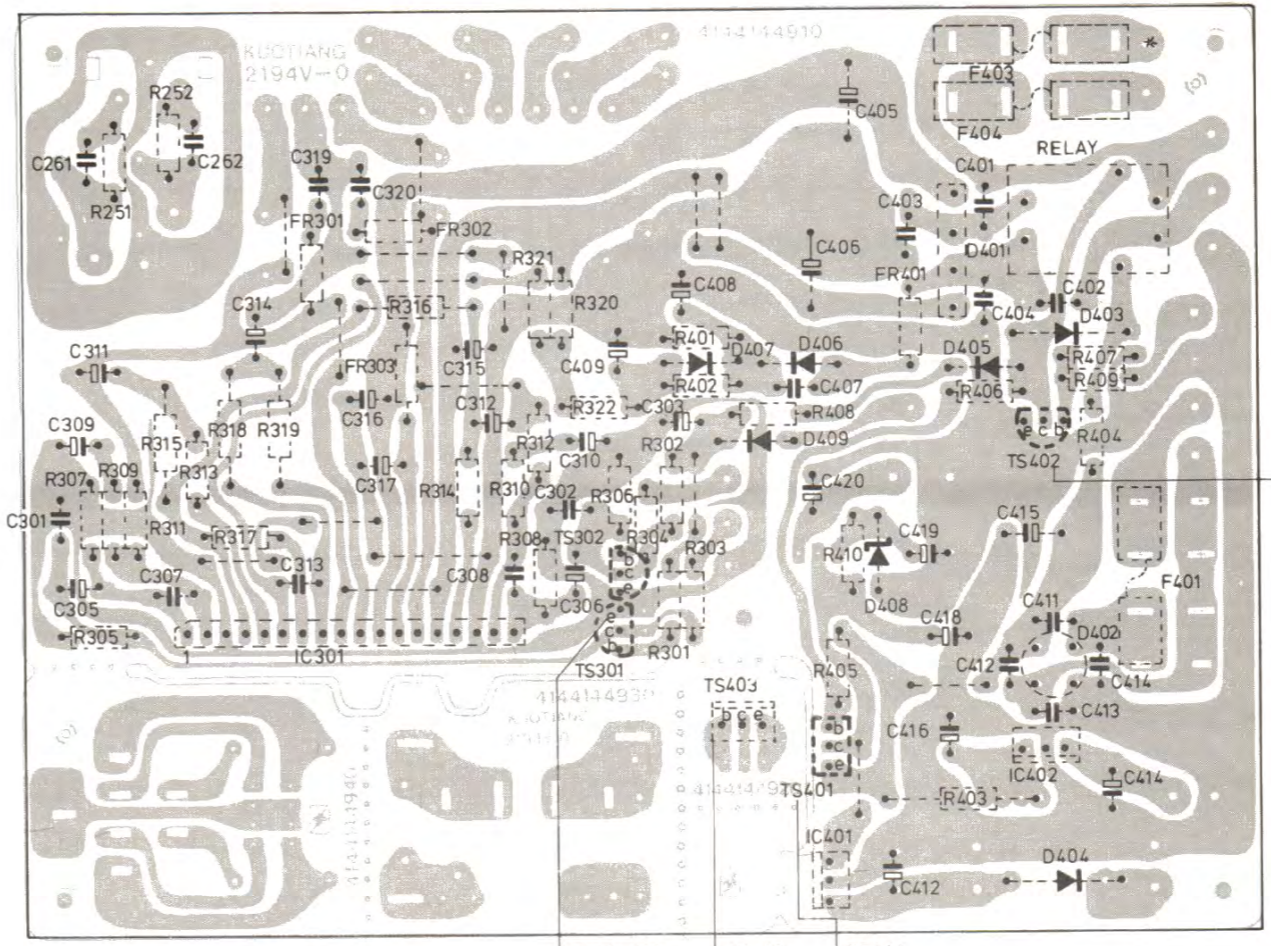
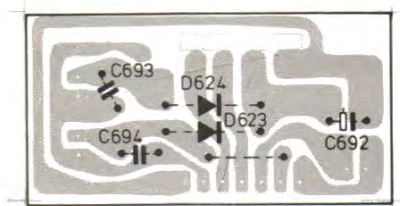
MECHANICAL PARTS RECORD PLAYER

51	4822 528 10716
52	4822 535 10168
53a,b	4822 528 10715
54	4822 321 30352
56	4822 535 60089
57	4822 532 51651
58	4822 532 52002
59	4822 530 51095
61	4822 325 60331
62	4822 381 11022
63	4822 361 10503
64	4822 505 10939
66	4822 276 12489
67	4822 276 12488
68	4822 276 12487
69	4822 358 50102
71	4822 277 11093
72	4822 404 60437
73	4822 492 20053
74	4822 462 71549
76	4822 444 60588
77	4822 535 92521
78	4822 522 32508
79	4822 492 70071
81	4822 277 11094
82a,b,c,d	4822 251 70311
83	4822 404 60435
84	4822 535 92524
86	4822 532 11684
87	4822 466 61163
88	4822 535 92519
89	4822 492 32906
91	4822 277 11092
92	4822 530 70354
93	4822 535 92518
94a,b	4822 277 11091
96	4822 535 92522
97	4822 404 60436
98	4822 277 11095
99	4822 277 60255
101	4822 535 92523

Only the mentioned parts are normal service parts!



IC501	1	2	3	4	5	6	7	8
	5.04V	0V	1V	1.57V	0V	0V	2.48V	2.46V



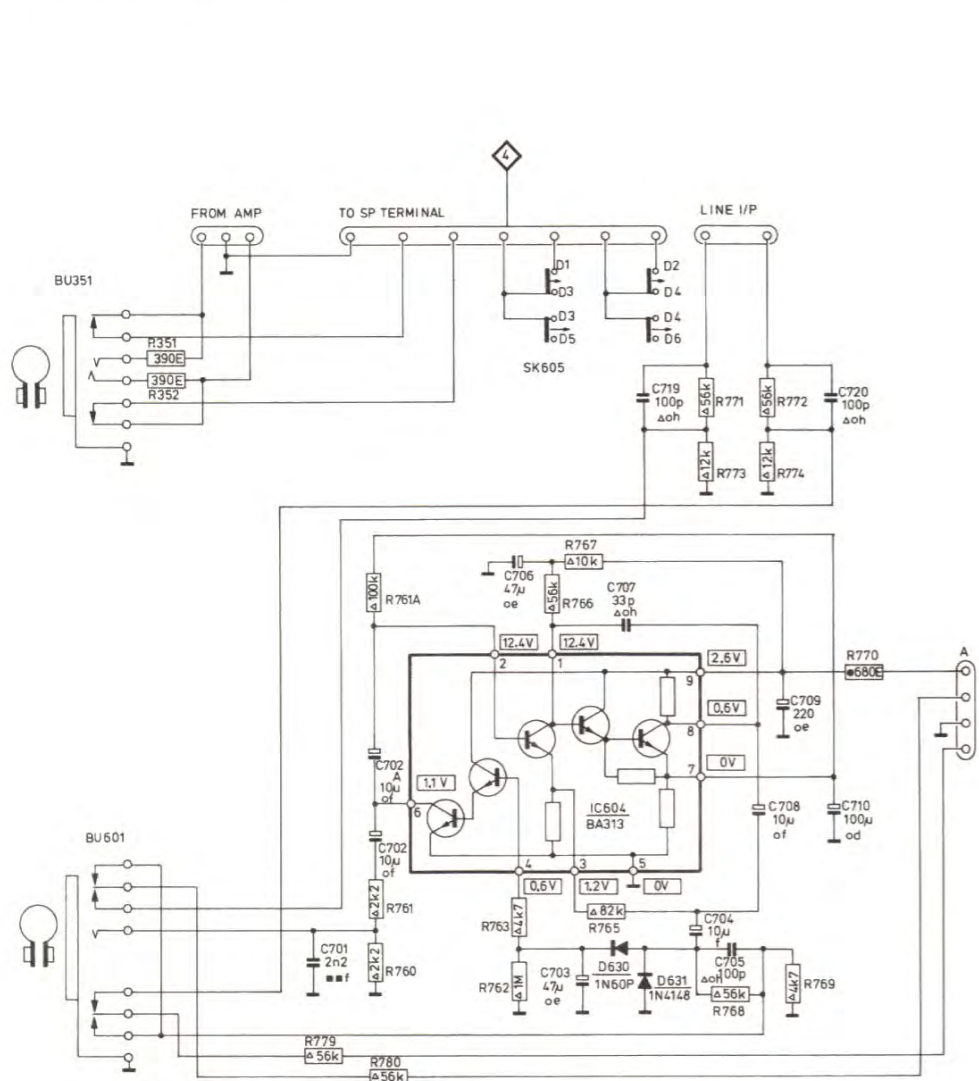
\* only for -/01/25

IC301	
1	0V
2	0V
3	0V
4	-24.8V
5	-0.9V
6	0.9V
7	-26.4V
8	-27V
9	-27.3V
10	0V
11	27.2V
12	25.8V
13	0V
14	-27.3V
15	-0.9V
16	0V
17	0V
18	0V

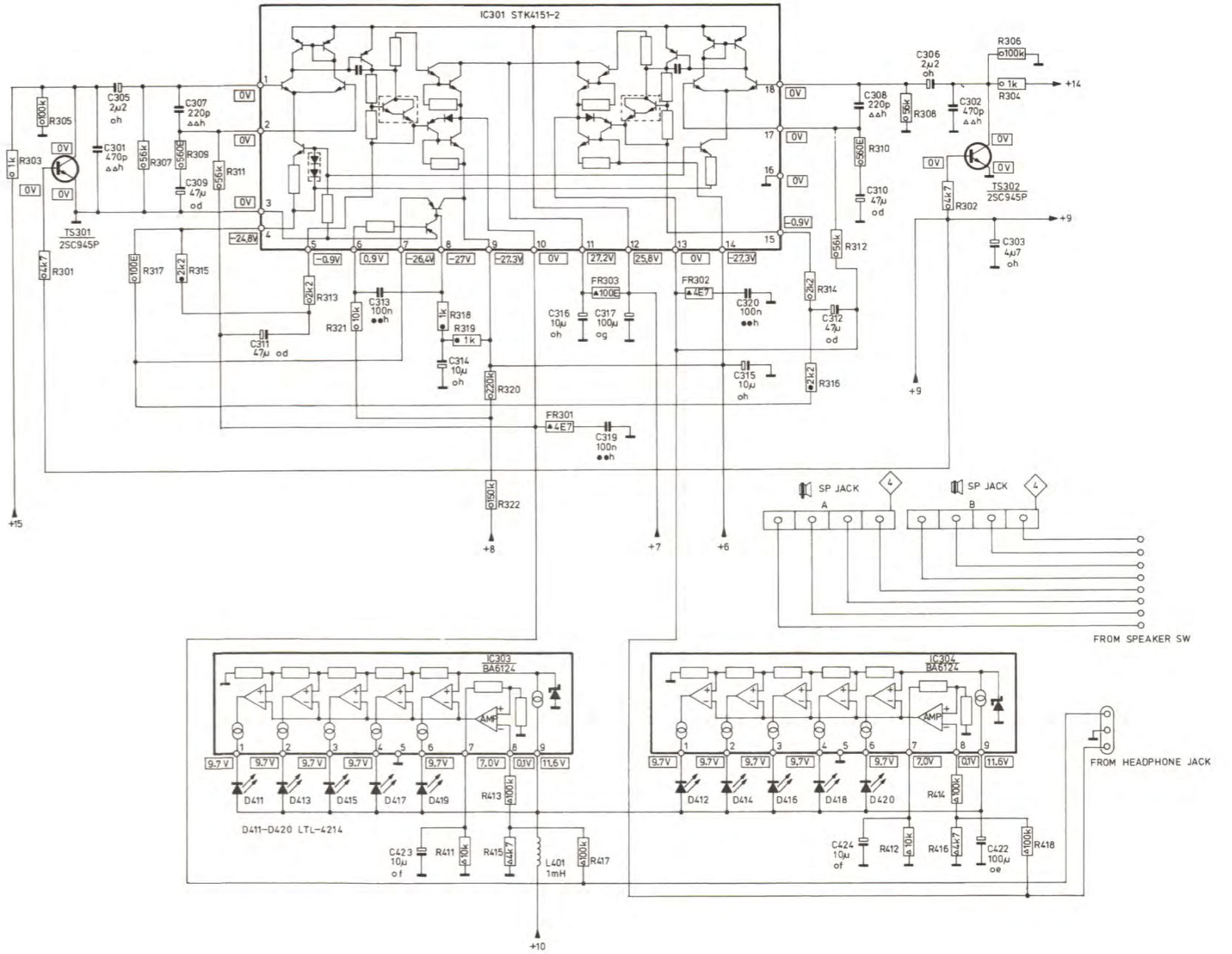
TS402  
e=0V  
c=0V  
b=0.6V

TS301,302	
e	0V
c	0V
b	0V
TS403	
e	14.4V
c	17.1V
b	13.9V
TS401	
e	17.2V
c	17.1V
b	16.6V

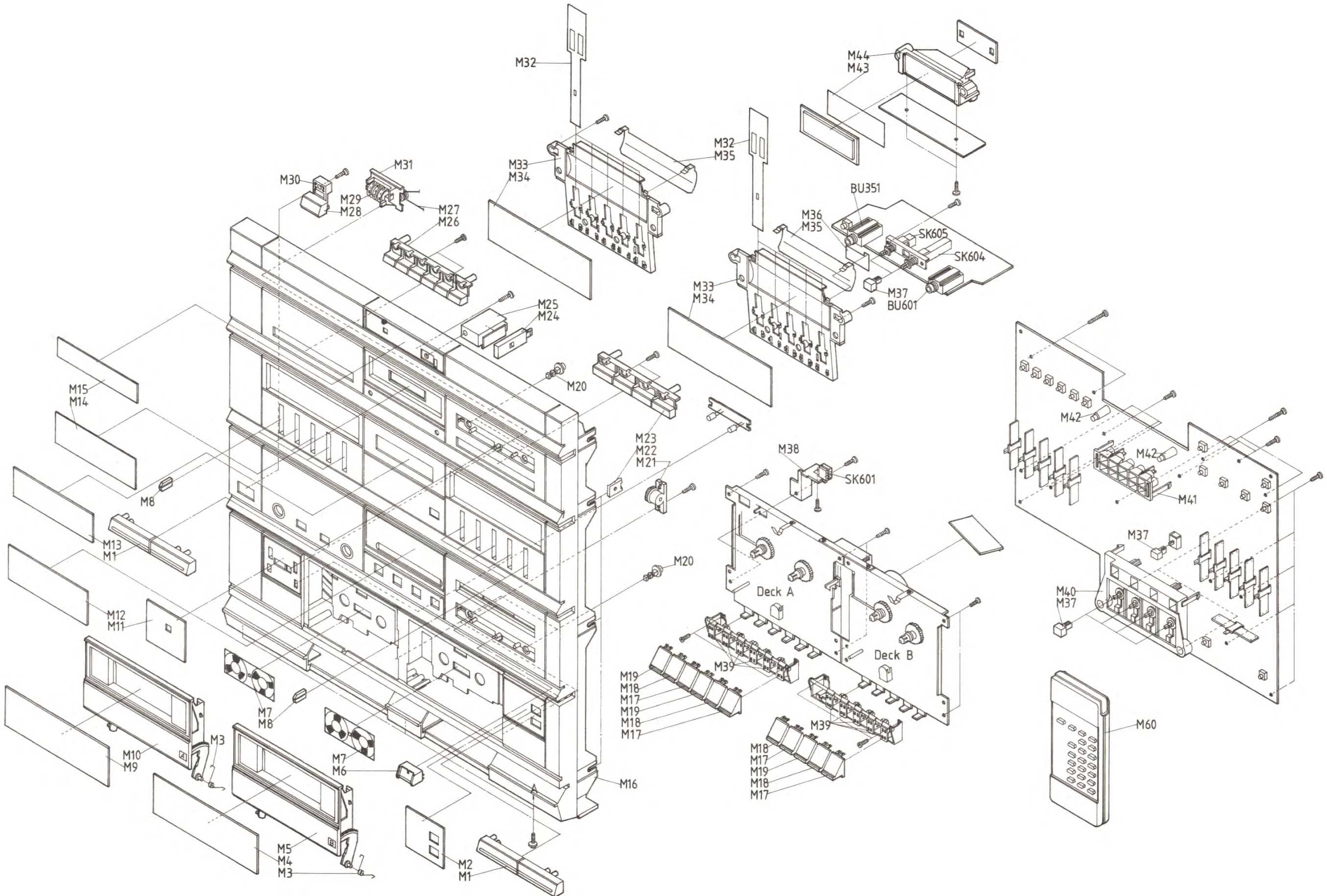
MIC AMP & POWER AMP CIRCUIT



- FUSE RESISTOR, 1/4W, 5%
  - CARBON RESISTOR, 1/16W, 5%
  - CARBON RESISTOR, 1/4W, 5%
  - CARBON RESISTOR, 1/2W, 5%
  - METAL FILM RESISTOR, 1W, 5%
  - PLATE CERAMIC CAPACITOR
  - TUBULAR CERAMIC CAPACITOR
  - MYLAR CAPACITOR
  - SEMI CONDUCTOR CAPACITOR
  - ELECTROLYTIC CAPACITOR
  - NON POLARIZED ELECTROLYTIC CAPACITOR
- SK-D  
 2 1  
 4 3  
 6 5
- \* d = 10V  
 e = 15V  
 f = 25V  
 g = 35V  
 h = 50V
- E.V.M.



# Mechanical Exploded View (A)



# Mechanical Exploded View (B)

