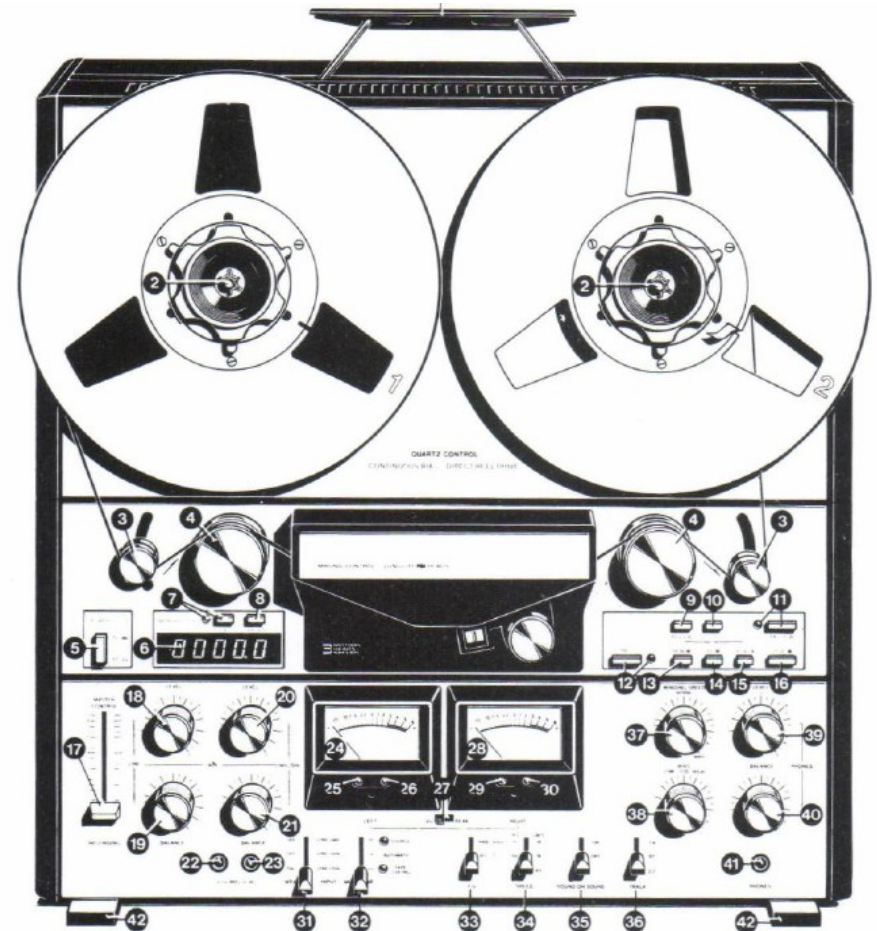


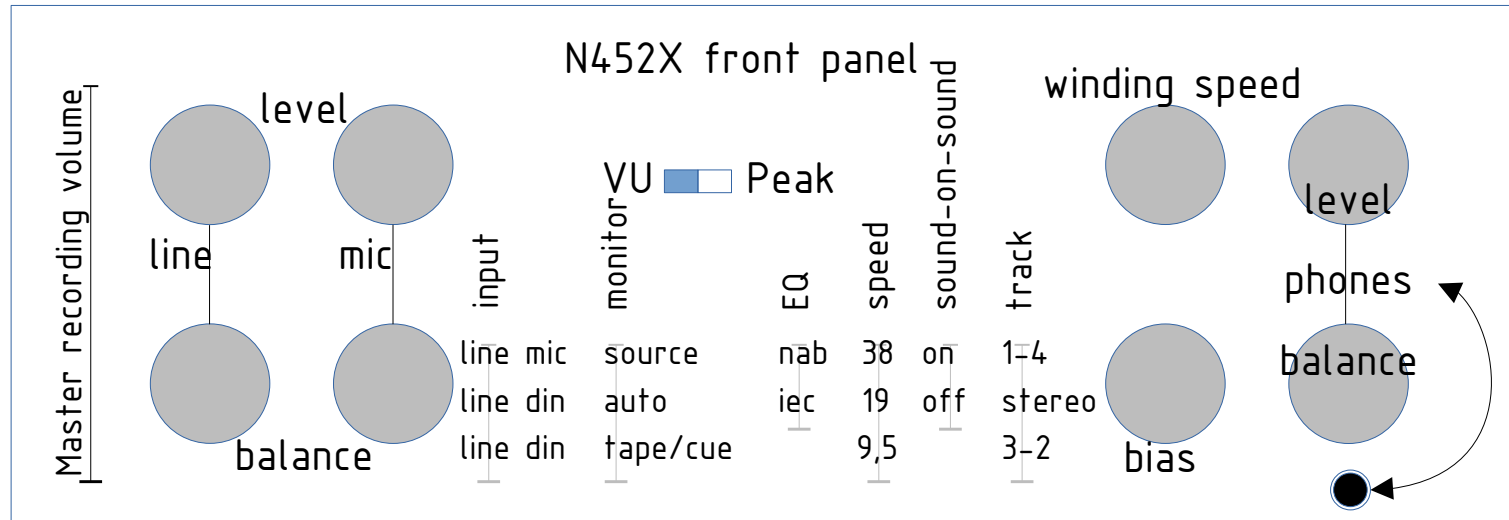
Quick Reference Guide of Philips N4520 & N4522:

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- 2 Layout of front panel N452X
Position of boards
- 3 Start of [N4520](#) section
- 4 Layout of Panel 1 (audio undertray) with
short calibration instructions
- 5 Layout of Panel 1 (audio undertray) with location of
transistors
- 6 Overview of electrolytic capacitors, transistors
and pots lists for replacement
- 7 Start of [N4522](#) section
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- 9 Layout of Panel 1 (audio undertray) with location of
transistors
- 10 Overview of electrolytic capacitors, transistors
and pots lists for replacement



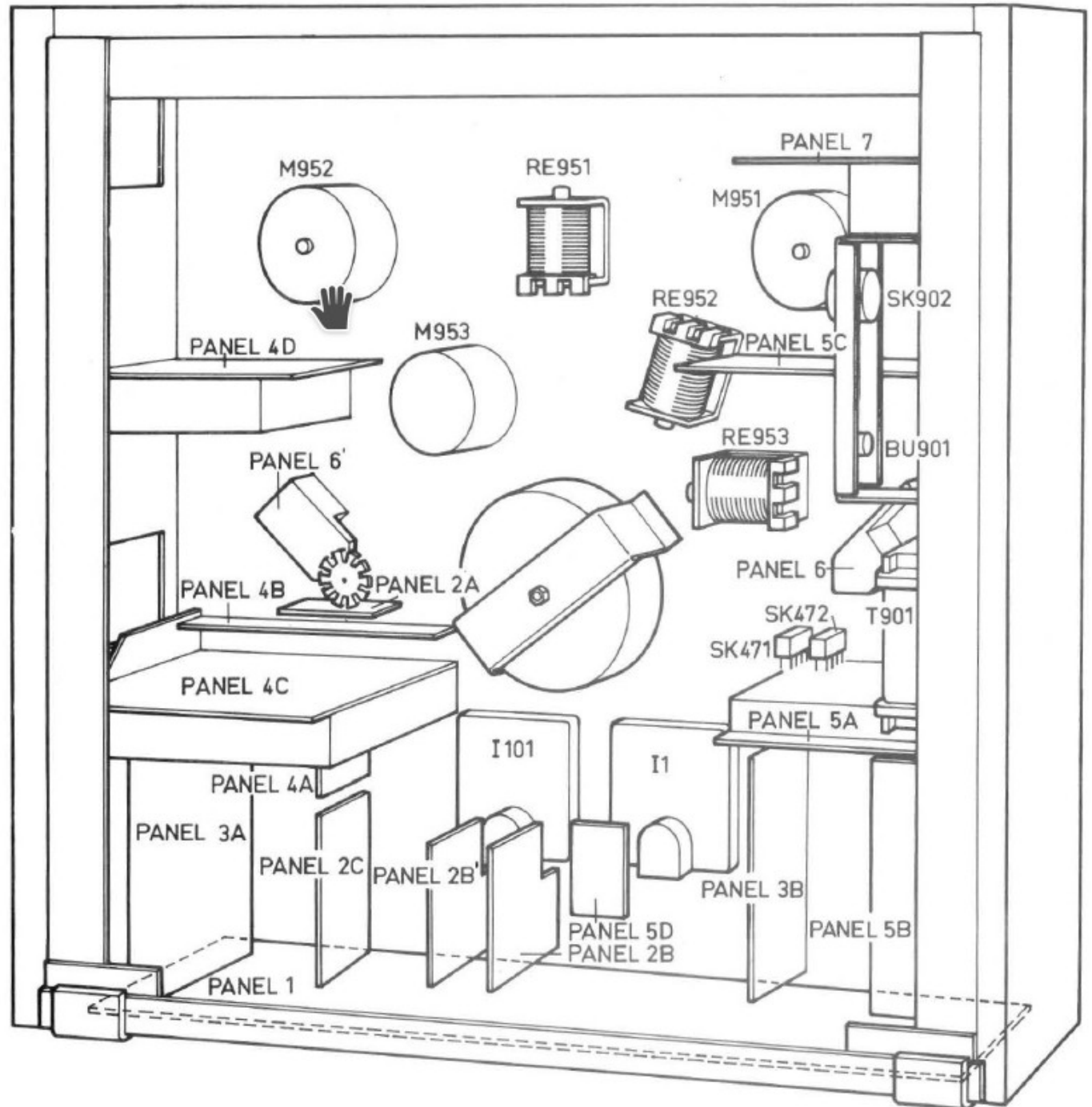
Layout of front panel N452X:



Position of boards N452X:

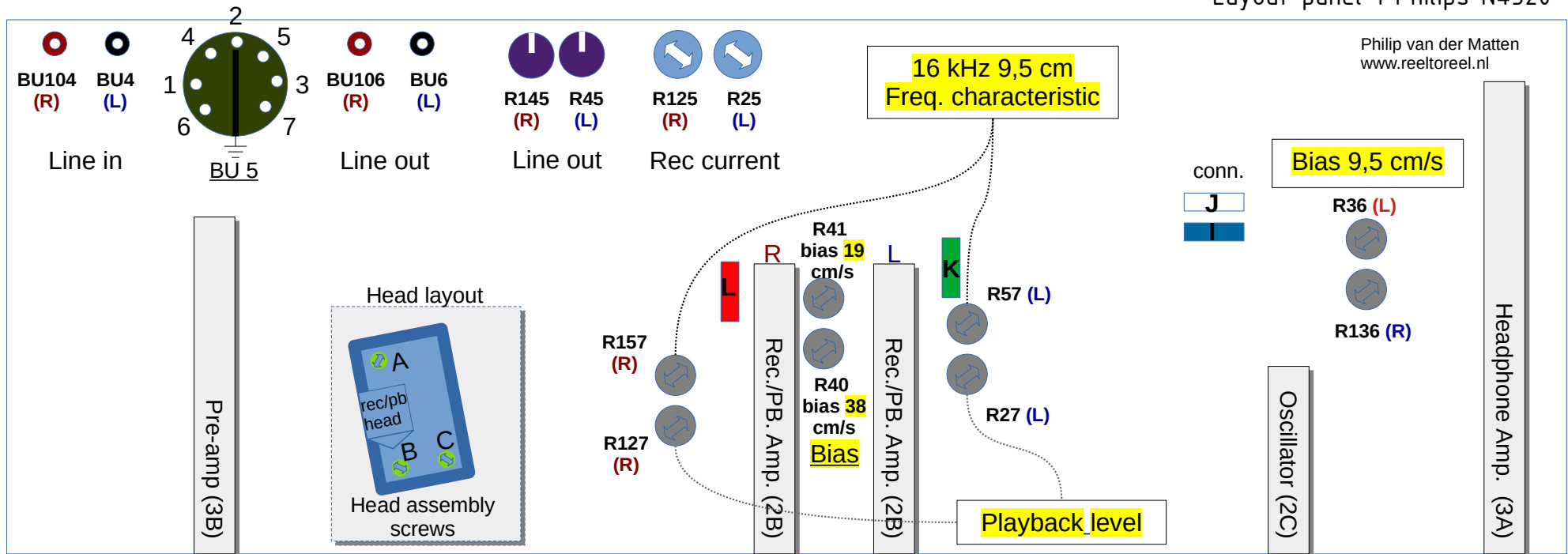
description

- 1 audio main board
- 2A opto-print
- 2B rec/pb amp L/R
- 2C oscillator
- 3A headphone amp
- 3B pre amp
- 4A winding speed pot
- 4B cue buttons
- 4C control
- 4D motor control
- 5A counter
- 5B power supply
- 5C capstan motor
- 5D indicator
- 6 tension control L/R
- 7 power supply



From here on:

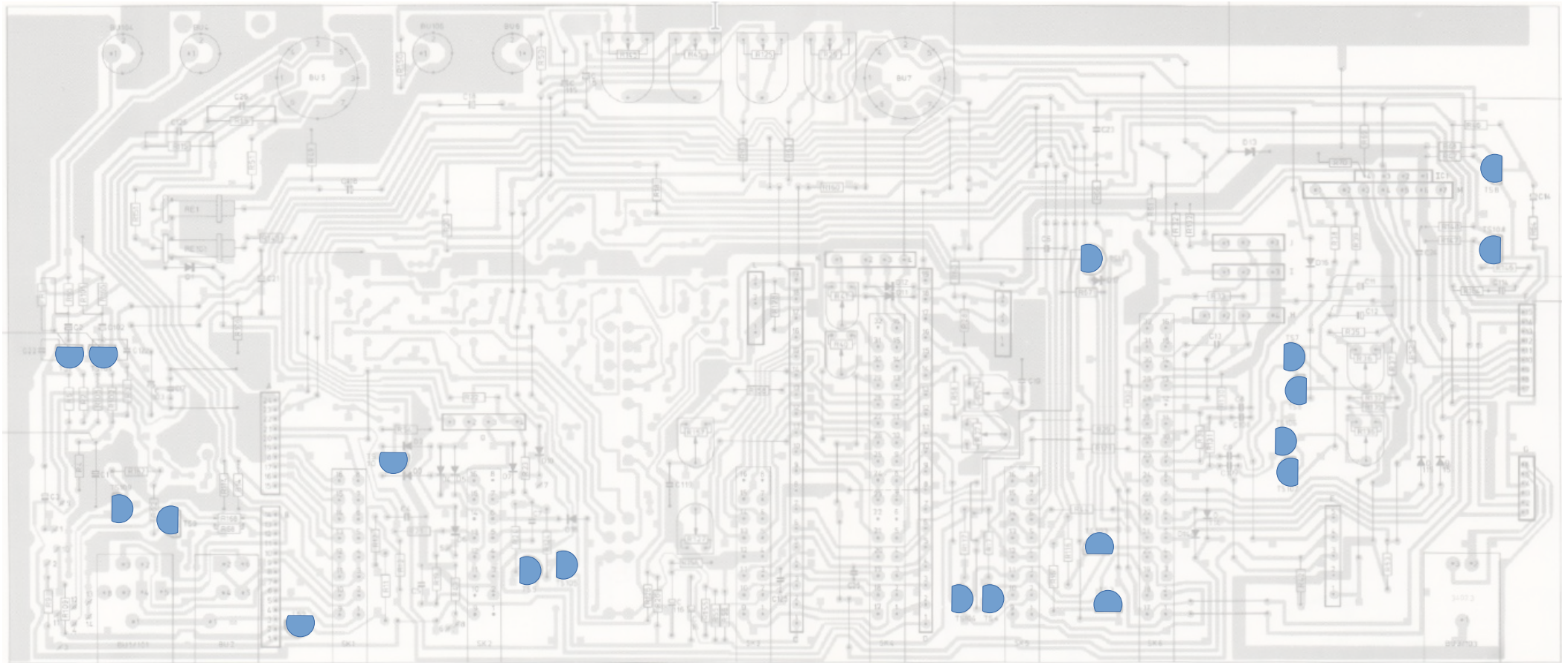
Philips N4520 *(not N4522)*



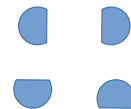
Calibrating N4520, short summary (always have the Service Manual at hand for the full instructions)

- 1 - section 3.2 impossible to perform (zero-setting peaklevel and VU meters).
- 2 - azimuth playback head. screw C.
- 3 - azimuth **record** head, insert conn. J into L, and conn. I into K. Adjust screw C rec head. reseal conn. (section 7)
- 4 - play ref tape 250 nWb/m - 0 dB section, line out: 780 mV. adjust R(1)27.
- 5 - play freq char. section, line output: make 1 kHz equivalent to 16 kHz $\pm 1,5$ dB. 1 kHz=ref.point. adjust R(1)57.
- 6 - record 9,5 cm/s BU5 (3,5) 330 Hz 1 V in. line out: 1 V $\pm 0,25$ dB. note LINE LEVEL position - LEAVE IT!
- 7 - record BU5 (3,5) 1 kHz 80 mV, 16 kHz 80 mV in. line out: 1 kHz=16 kHz ± 2 dB. adjust R(1)36 bias.
- 8 - record freq sweep 31 Hz-**16 kHz**. line out: ± 2 dB. 1 kHz=ref.point 0 dB
- 9 - record 330 Hz, adjust input signal so line out=1.41 V (meters +3 dB). distortion <3%. adjust R(1)36. repeat sweep.
- 10 - record BU5 (3,5) 330 Hz 1,41 V. line out: 1,41 V $\pm 0,25$ dB. adjust R(1)25 rec current.
- 11 - record 19 cm/s(!) BU5 (3,5) 1 kHz 80 mV, 20 kHz 80 mV in. line out: 1 kHz=20 kHz ± 2 dB. R41 bias 19cm.
- 12 - record freq sweep 31 Hz-**20 kHz(!)**. line out: ± 2 dB. 1 kHz=ref.point 0 dB
- 13 - record 330 Hz, adjust input signal so line out=1.41V (meters +3dB). distortion <3%. adjust R41. repeat sweep.
- 14 - record 38 cm/s(!) BU5 (3,5) 1 kHz 80 mV, 26 kHz(!) 80 mV in. line out: 1 kHz=26 kHz ± 2 dB. R40 bias 38 cm.
- 15 - record freq sweep 31 Hz-**26 kHz(!)**. line out: ± 2 dB. 1 kHz=ref.point 0 dB
- 16 - record 330 Hz, adjust input signal so line out=1.41 V (meters +3 dB). distortion <3%. adjust R40. repeat sweep.

Layout of transistors & potentiometers on Panel 1 N4520:



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Philips N4520 components list

audio panel 1 | record/playback PCBs 2B | headphone 3A | panel 3B
 left right

total:

caps						
capacity in μF :	V					
0,47	63	9			2	7
1	63	4	2	1	1	
1,5	63	2	2			
3,3	63	2			2	
4,7	63	21	6	5	5	5
6,8	40	2			2	
15	40	8	2	2	2	2
22	25	13	2	2	2	7
47	10	4	2	1	1	
100	25	1	1			
150	16	2			2	
220	25	2		1	1	

total caps: 70 17 12 12 10 19

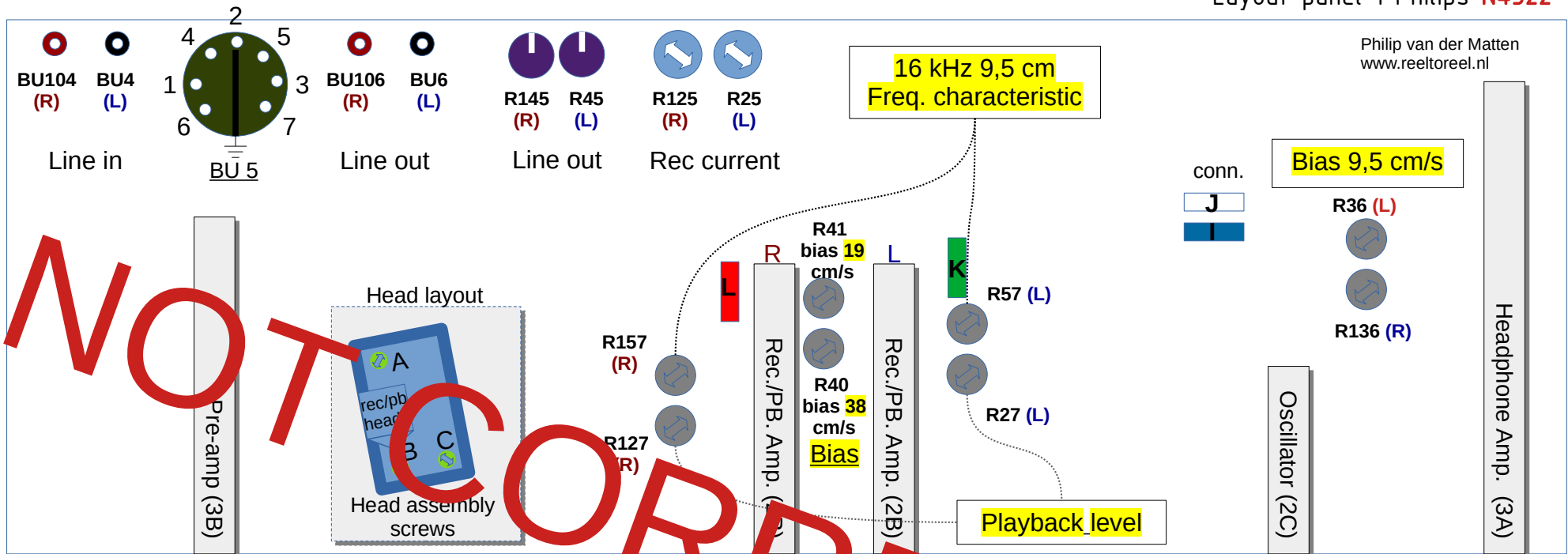
transistors						
BC327/25		2			2	
BC337/25		2			2	
BC546A		2	2			
BC547		1	1			
BC547C		2			2	
BC548		8	4		4	
BC548C		10		3	3	4
BC549		2	2			
BC549B		6				6
BC550B		2		1	1	
BC556A		2	2			
BC557		1	1			
BC558		4		2	2	
BC558B		4				4
BD135						?
BF245A		7	7			

total transistors 55 19 6 6 14 10

var. resistors/pots:			
R(1)36	100k Ω	R(1)25	22k
R(1)57	470k Ω	R(1)45	10k
R(1)27	22k Ω		checken
R40	47k Ω		
R41	100k Ω		

From here on:

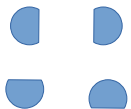
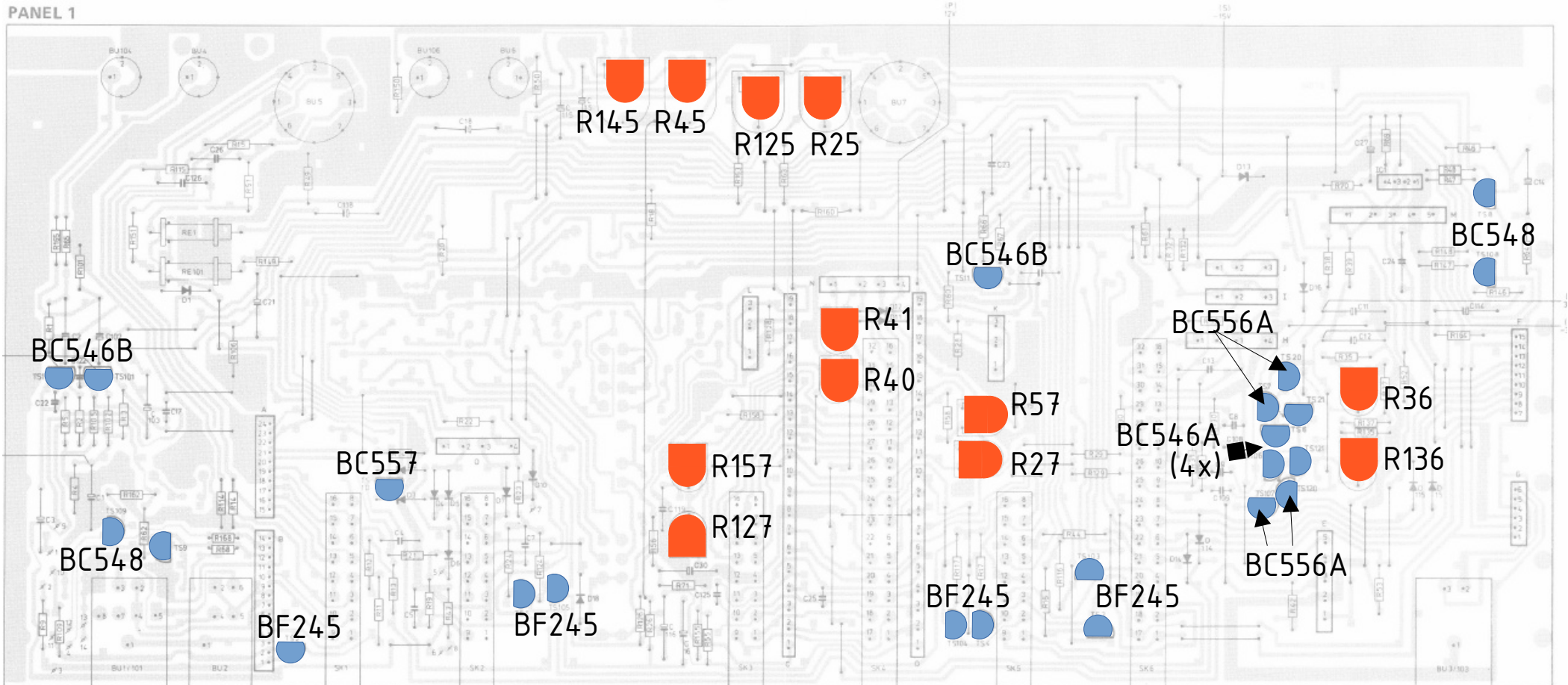
Philips N4522 (*not N4520*)



Calibrating N4520, short summary (always have the Service Manual at hand for the full instructions)

- 1 - section 3.2 impossible to perform (zero-setting peaklevel and VU meters).
- 2 - azimuth playback head. screw C.
- 3 - azimuth **record** head, insert conn. J into L, and conn. I into K. Adjust screw C rec head. Reseat conn. section 7.
- 4 - play ref tape 250 nWb/m - 0 dB section, line out: 780 mV. adjust R(1)27.
- 5 - play freq char. section, line output: make 1 kHz equivalent to 16 kHz $\pm 1,5$ dB. 1 kHz=ref.point. adjust R(1)57.
- 6 - record 9,5 cm/s BU5 (3,5) 330 Hz 1 V in. line out: 1 V $\pm 0,25$ dB. note LINE LEVEL position - LEAVE IT!
- 7 - record BU5 (3,5) 1 kHz 80 mV, 16 kHz 80 mV in. line out: 1 kHz=16 kHz ± 2 dB. adjust R(1)36 bias.
- 8 - record freq sweep 31 Hz-**16 kHz**. line out: ± 2 dB. 1 kHz=ref.point 0 dB
- 9 - record 330 Hz, adjust input signal so line out=1.41 V (meters +3 dB). distortion <3%. adjust R(1)36. repeat sweep.
- 10 - record BU5 (3,5) 330 Hz 1,41 V. line out: 1,41 V $\pm 0,25$ dB. adjust R(1)25 rec current.
- 11 - record 19 cm/s(!) BU5 (3,5) 1 kHz 80 mV, 20 kHz 80 mV in. line out: 1 kHz=20 kHz ± 2 dB. R41 bias 19cm.
- 12 - record freq sweep 31 Hz-**20 kHz(!)**. line out: ± 2 dB. 1 kHz=ref.point 0 dB
- 13 - record 330 Hz, adjust input signal so line out=1.41V (meters +3dB). distortion <3%. adjust R41. repeat sweep.
- 14 - record 38 cm/s(!) BU5 (3,5) 1 kHz 80 mV, 26 kHz(!) 80 mV in. line out: 1 kHz=26 kHz ± 2 dB. R40 bias 38 cm.
- 15 - record freq sweep 31 Hz-**26 kHz(!)**. line out: ± 2 dB. 1 kHz=ref.point 0 dB
- 16 - record 330 Hz, adjust input signal so line out=1.41 V (meters +3 dB). distortion <3%. adjust R40. repeat sweep.

Layout of transistors & potentiometers on Panel 1 **N4522:**



BF245



Pots:	
R(1)36	22 kΩ
R(1)27	22 kΩ
R(1)57	47 kΩ
R40	47 kΩ
R41	100 kΩ
R(1)25	22 kΩ

Philips N4522 components list

audio panel 1 | record/playback PCBs 2B| headphone 3A panel 3B
 left right

total:

caps						
capacity in μF :	V					
0,47	63	9			2	7
1	63	4	2	1	1	
1,5	63	2	2			
3,3	63	2			2	
4,7	63	21	6	5	5	5
6,8	40	2			2	
15	40	8	2	2	2	2
22	25	13	2	2	2	7
47	10	4	2	1	1	
100	25	1	1			
150	16	2			2	
220	25	2		1	1	

total caps: 70 17 12 12 10 19

transistors						
BC327/25	2				2	
BC337/25	2				2	
BC546A	2	2				
BC547	1	1				
BC547C	2				2	
BC548	8	4			4	
BC548C	10		3	3	4	
BC549	2	2				
BC549B	6					6
BC550B	2		1	1		
BC556A	2	2				
BC557	1	1				
BC558	4		2	2		
BC558B	4					4
BD135						?
BF245A	7	7				

total transistors 55 19 6 6 14 10

var. resistors/pots:			
R(1)36	22 k Ω	R(1)25	22 k Ω
R(1)57	470 k Ω	R(1)45	10 k Ω
R(1)27	22 k Ω		
R40	47 k Ω	this table is still to be checked	
R41	100 k Ω		