

Bang & Olufsen



BEOMASTER 2000

TYPE 2801

BANG & OLUFSEN A/S
DK - 7600 STRUER
DENMARK

Telephone 07 - 85 11 22 Telex 66529
Cable address Bangoluf

3538248

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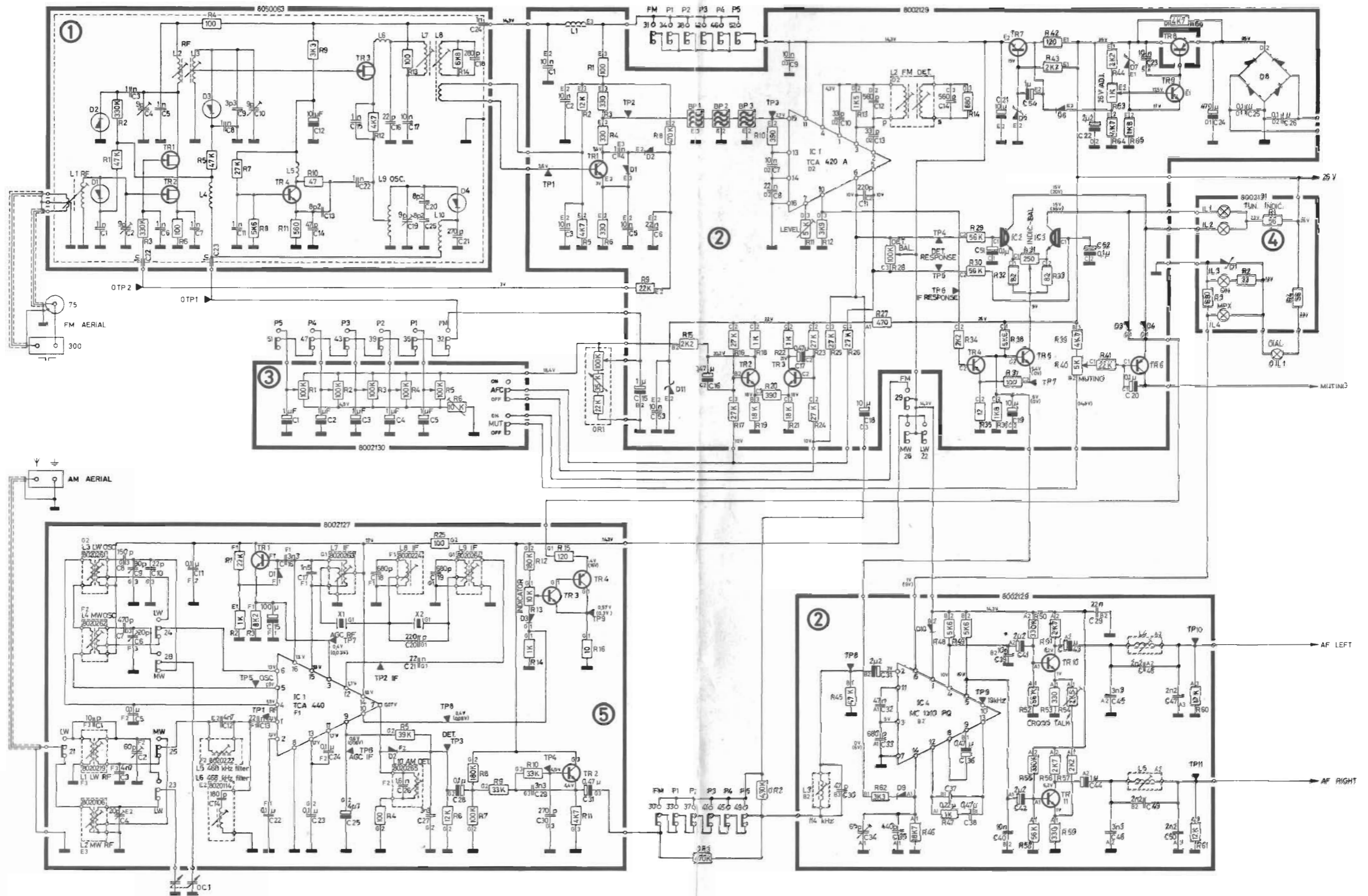
Form. 7208



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TECHNICAL DATA	BEOMASTER 2000, type 2801	DIN 45 500 REQUIREMENTS
Amplifier		
Power output at specified distortion 1000 Hz RMS	2 x 40 watts / 4 Ohms 2 x 30 watts / 8 Ohms	2 x 6 watt
Music power	2 x 75 watts / 4 Ohms 2 x 40 watts / 8 Ohms	
Speaker Impedance	4 ohms	4 or 8 Ohms
Harmonic distortion		
1000 Hz 50 mW DIN 45 500	< 0,06%	
1000 Hz at stated output	< 0,1%	≤ 1%
Intermodulation DIN 45 500	< 0,25%	≤ 3%
Frequency range ± 1,5 dB DIN 45 500	20 - 30.000 Hz	40 - 16.000 Hz
Power bandwidth DIN 45 500	10 - 40.000 Hz	40 - 12.500 Hz
Damping factor 1000 Hz DIN 45 500	> 45	≥ 3
Input pick-up, low impedance	2,5 mV / 47 KOhms	≥ 5 mV / 47 KOhm
2 channel high impedance	175 mV / 1 MOhms	≥ 500 mV / 470 KOhm
Signal-to-noise ratio DIN 45 500		
50 mW, pick-up, low impedance	> 60 dB	≥ 47 dB
50 mW high impedance	> 60 dB	≥ 47 dB
Channel separation 1000 Hz DIN 45 500	> 56 dB	≥ 40 dB
250 - 10.000 Hz	> 40 dB	≥ 26 dB
Output tape recorder 1000 Hz DIN 45 500	15 mV / 20 KOhms	0,1 - 2 mV / KOhm
Headphones		
Bass control at 40 Hz	± 17 dB	
Treble control at 12.500 Hz	± 15 dB	
FM tuner		
Range	87,5 - 104 MHz	
Sensitivity 26 dB ± 40 kHz	< 1,5 μV / 75 Ohms	
Sensitivity IHF	< 2 μV / 75 Ohms	
Limiting -3 dB ± 40 kHz	< 1 μV / 75 Ohms	
Signal-to-noise ratio DIN 45 500	> 65 dB	≥ 47 dB
Selectivity IHF	> 62 dB	
Frequency range ± 1,5 dB DIN 45 500	20 - 15.000 Hz	40 - 12.500 Hz
Harmonic distortion DIN 45 500	< 0,4%	≤ 2,5%
Stereo channel separation DIN 45 500	> 35 dB	≥ 22 dB
Pilot suppression 19 kHz	> 48 dB	≥ 25 dB
38 kHz	> 35 dB	≥ 31 dB
AM tuner		
LW	147 - 350 kHz	
MW	520 - 1605 kHz	
Sensitivity 20 dB LW 200 kHz	85 μV	
MW 1000 kHz	35 μV	
Bandwidth 3 dB	6,8 kHz	
Other data		
Power supply	110-130-220-240 V	
Power consumption	20 - 250 watts	
Dimensions W x H x D	68,5 x 7,5 x 27 cm	
Weight	8,2 kg	

Subject to change without notice



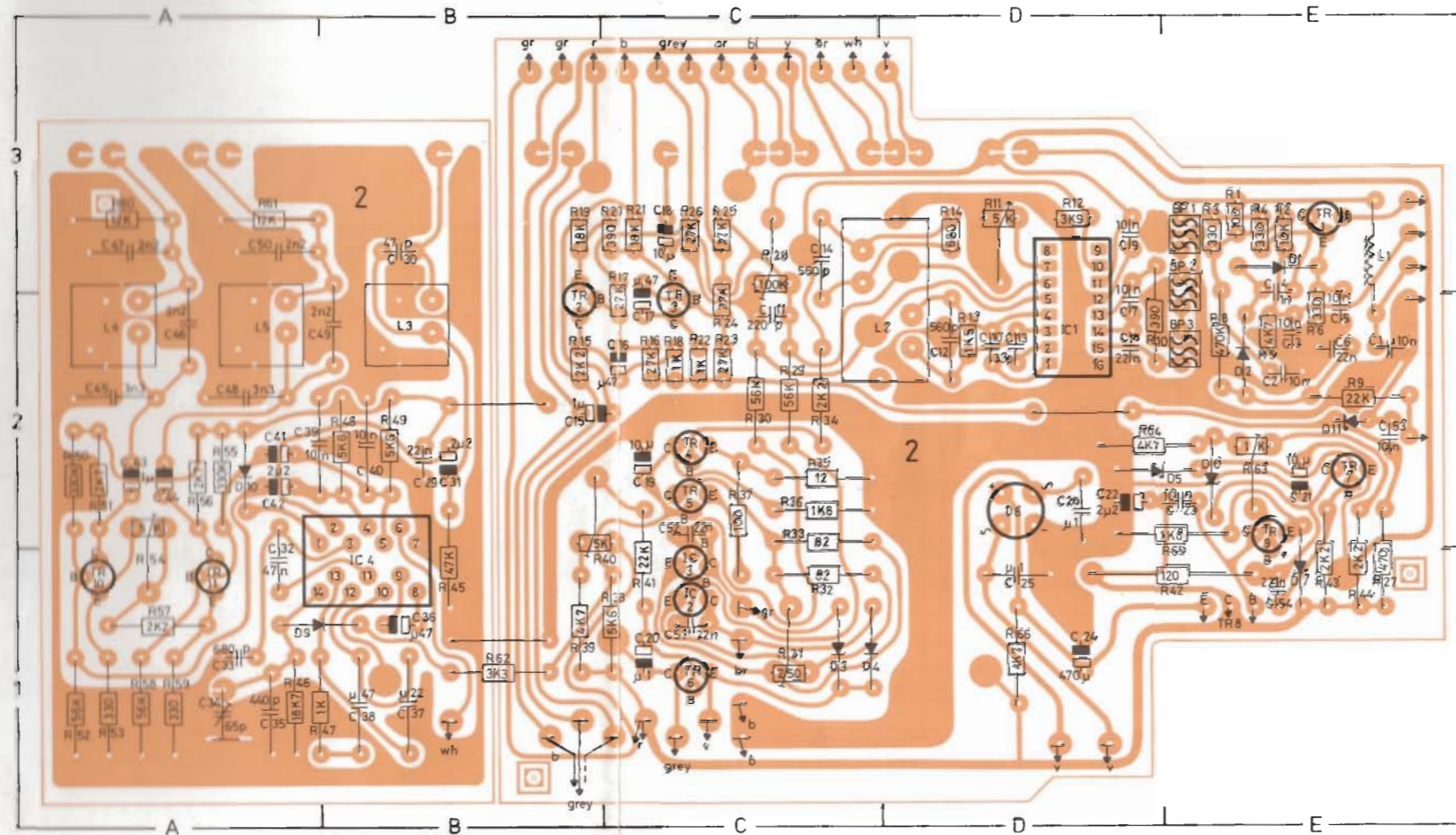
- 18 LW
- 19 LW
- 20 LW
- 21 LW
- 22 LW
- 23 MW
- 24 MW
- 25 MW
- 26 MW
- 27 MW
- 28 MW
- 29 FM
- 30 FM
- 31 FM
- 32 FM
- 33 P1
- 34 P1
- 35 P1
- 36 P1
- 37 P2
- 38 P2
- 39 P2
- 40 P2
- 41 P3
- 42 P3
- 43 P3
- 44 P3
- 45 P4
- 46 P4
- 47 P4
- 48 P4
- 49 P5
- 50 P5
- 51 P5
- 52 P5

Diagram 1

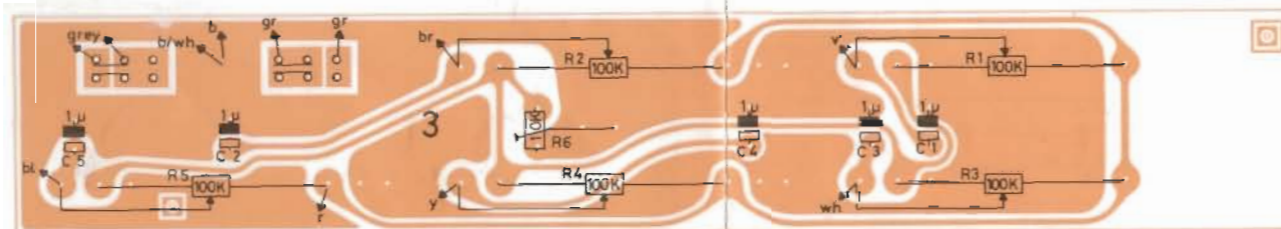
1 FRONT END
8050063



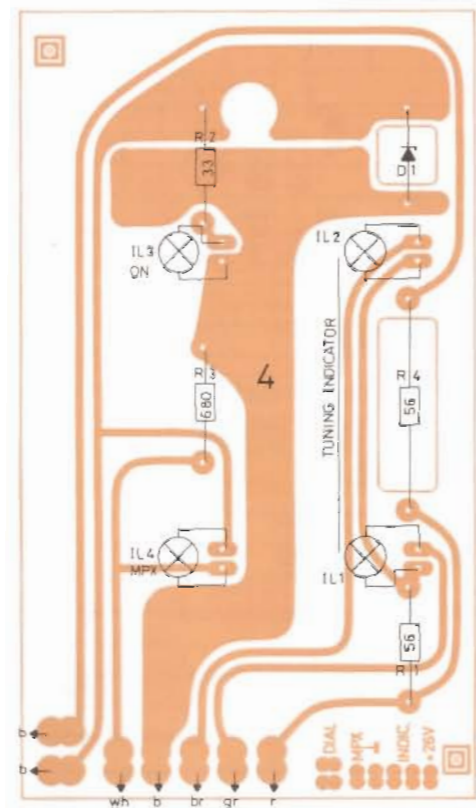
2 IF SECTION AND
DECODER
8002129



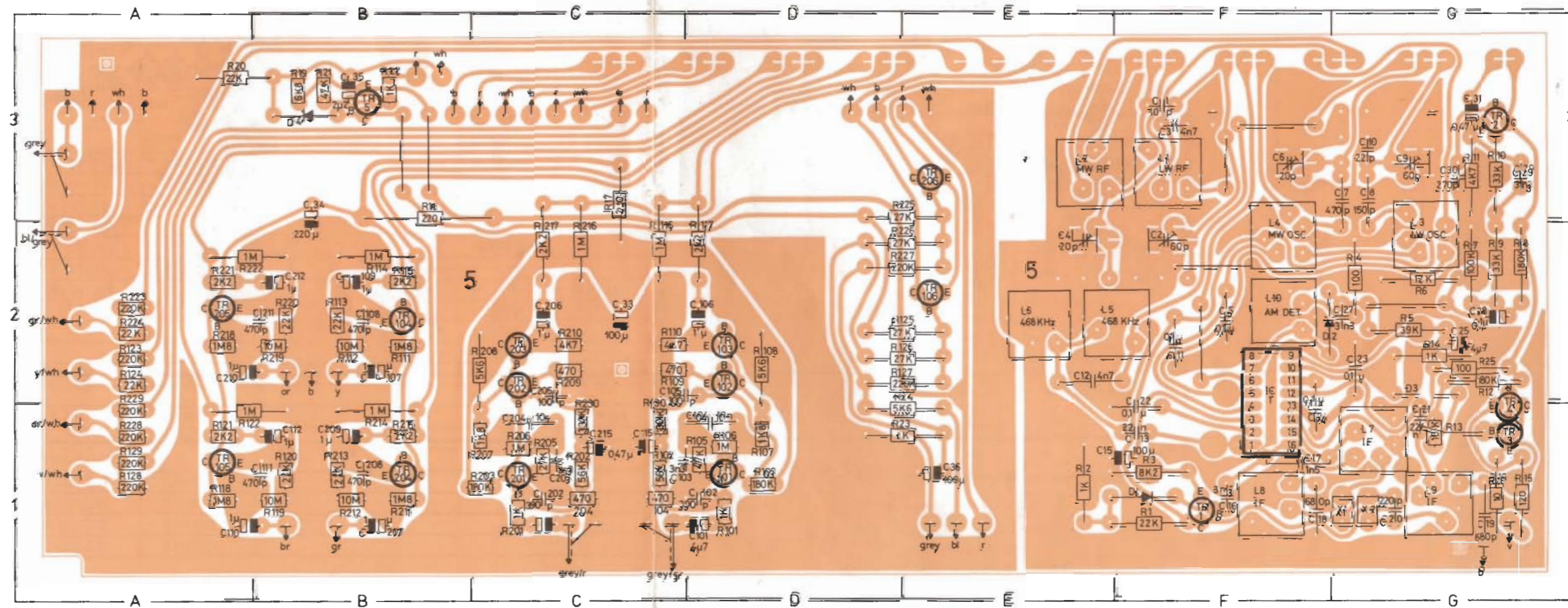
3 PRE-SET TUNING
8002130



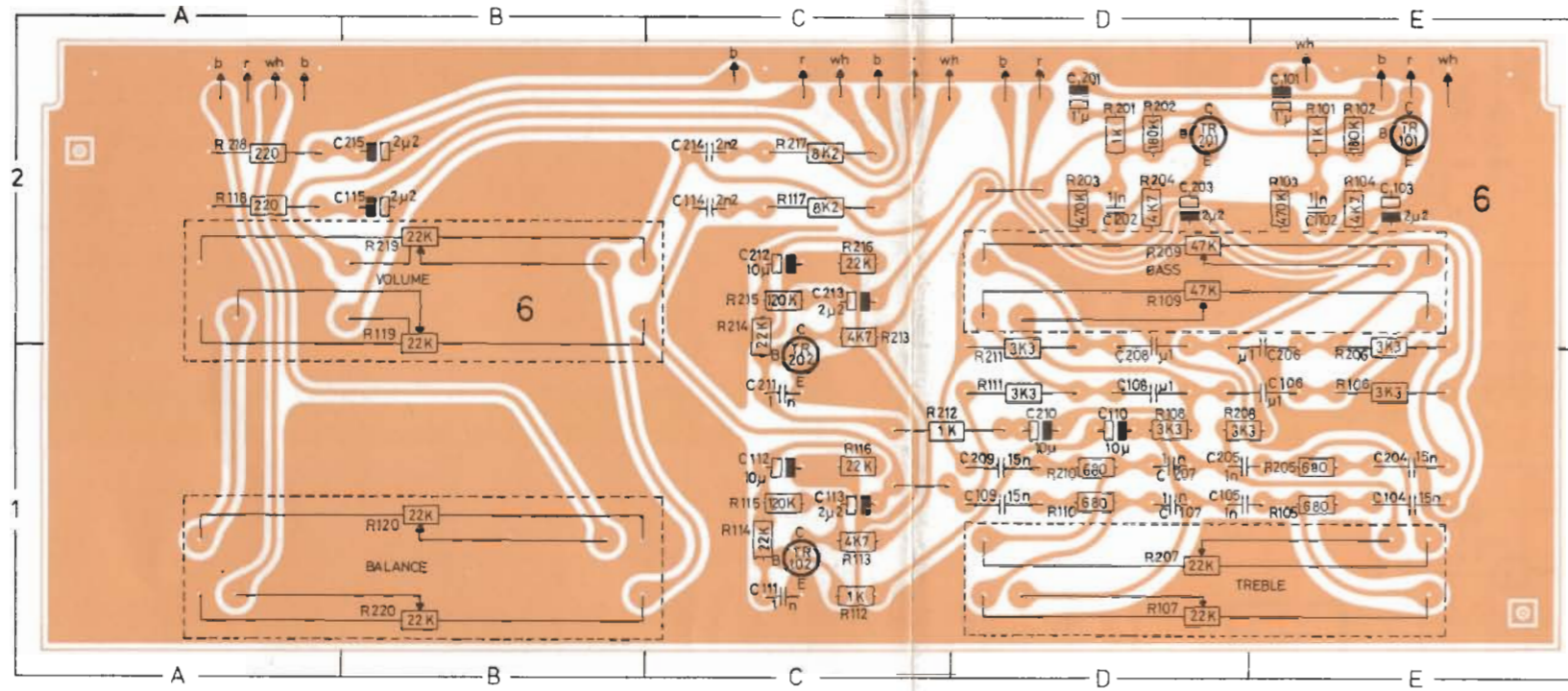
4 INDICATOR CIRCUIT
8002131



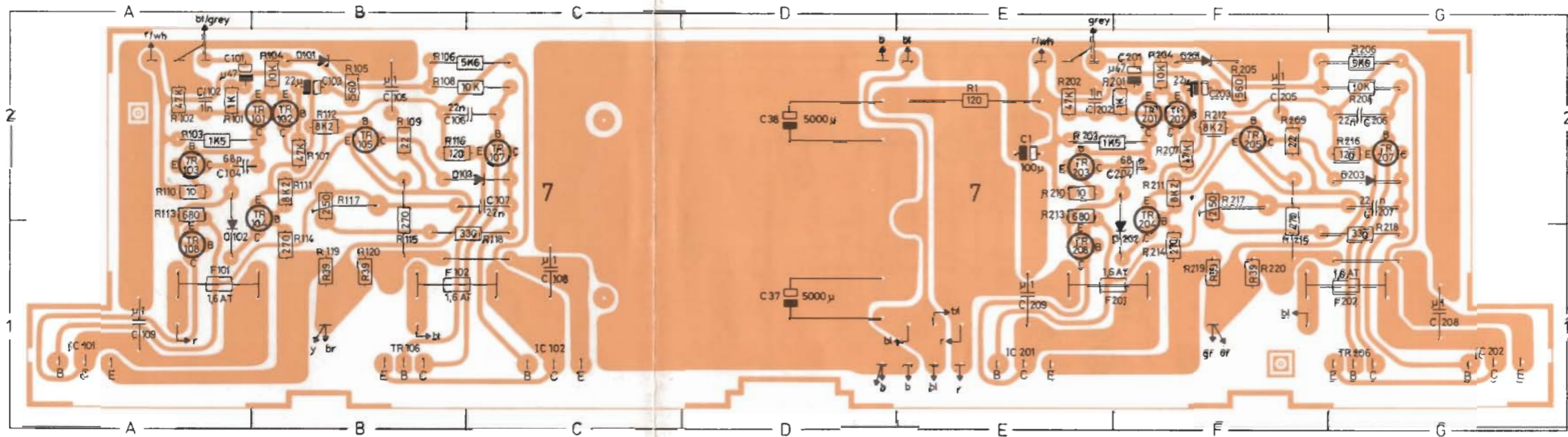
5 AM - IF SECTION
AND PREAMPLIFIER
8002127



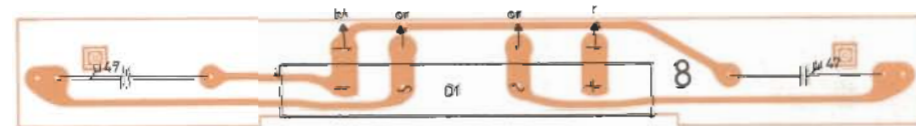
6 TONE AMPLIFIER
8002125



7 OUTPUT AMPLIFIER
8002125



8 POWER SUPPLY
8002125



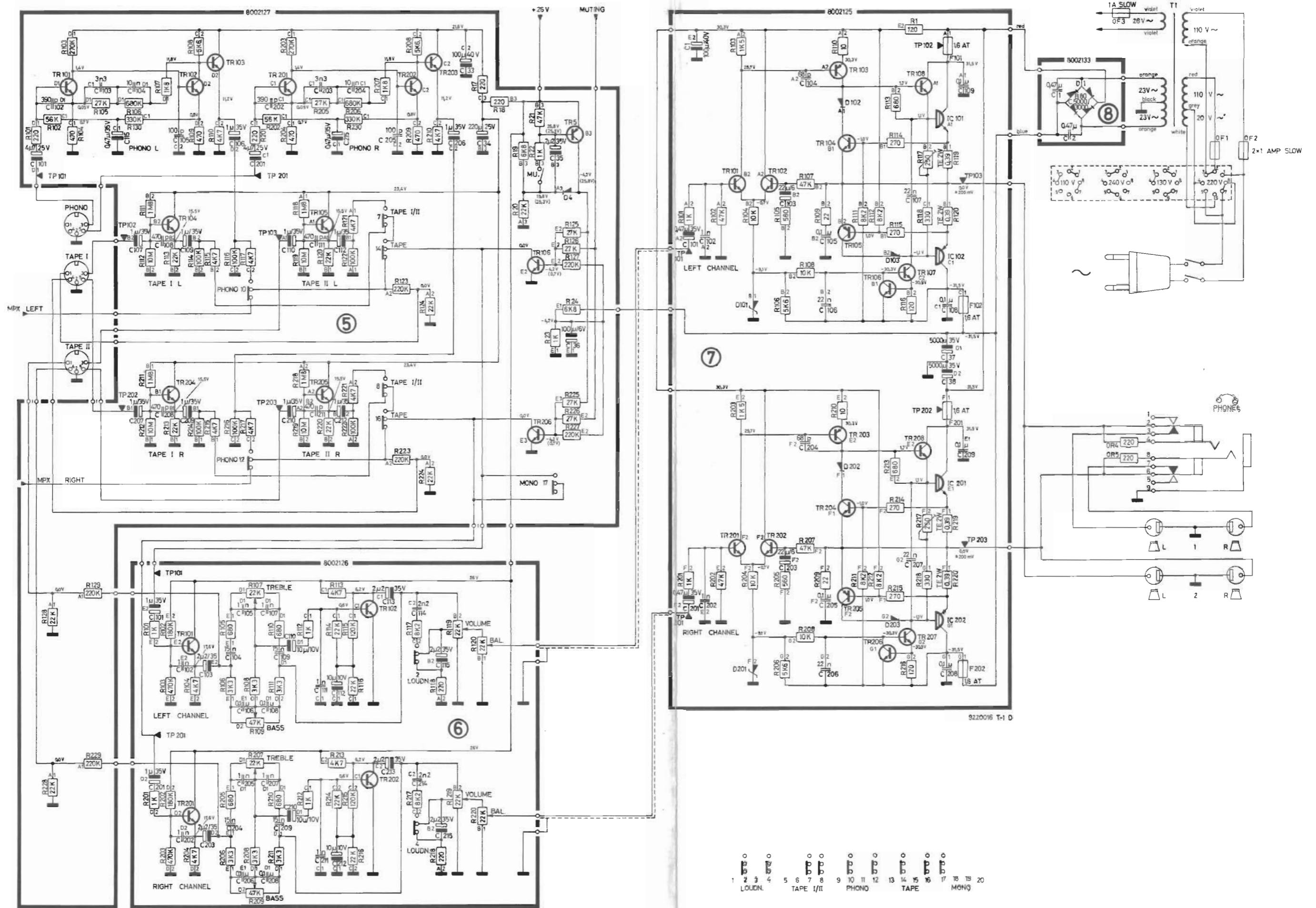















Diagram 2

TRANSISTOR CHART

															
1TR1	8320119								TIS 88						
1TR2									2N5245						
1TR3	8320136								TIS 88	3C2P		U1981E			
									2N5245						
									3C2						
1TR4	8320112														BF195
2TR1	8320311	BF240													
2TR2	8320285				BC183CK	BC183CL									
2TR3															
2TR4	8320200		MPS6515		BC182BK	BC182BL									
2TR5					BC237B										
2TR6	8320152				BC212BK	BC212BL	BC261B								
					BC251B										
2TR7	8320323		MPS A05												
2TR8	8320240														BD136
2TR9	8320200		MPS6515		BC182BK	BC182BL									
2TR10					BC237B										
2TR11															
2IC2	8340028		MPS A13												
2IC3			SPS5418												
5TR1	8320108		MPS6515		BC238B	BC183BL	BC108B	BC113							
5TR2					BC548B			BC114							
5TR3					BC183BK										
5TR4	8320324		MPS A55												
5TR5	8320161				BC212BK	BC212BL	BC261B								
					BC251B										
5TR101/201	8320344				BC384BK	BC384BL									
5TR102/202					BC550B										
5TR103/203	8320097		BC317B		BC547B	BC182BL		BC207B							
					BC237B										
					BC171B										
					BC182BK										
5TR104/204	8320095		BC319B		BC173B	BC184BL	BC109B								
5TR105/205					BC549B										
					BC239B										
					BC184BK										
5TR106/206	8320138				BC183BK	BC183BL									
6TR101/201	8320097		BC317B		BC547B	BC182BL		BC207B							
6TR102/202					BC237B										
7TR101/201					BC171B										
7TR102/202					BC182BK										
7TR103/203	8320322		MPS A56												
7TR104/204	8320097		BC317B		BC547B	BC182BL		BC207B							
					BC237B										
					BC171B										
					BC182BK										
7TR105/205	8320161				BC212BK	BC212BL	BC261B								
					BC251B										
7TR106/206	8320138				BC183BK	BC183BL									
7TR107/207	8320321		MPS A06												
7TR108/208															
7IC101/201	8340042										TIP141				
7IC101/201	8340030											MJ3001			
7IC102/202	8340041										TIP146				
7IC102/202	8340019												MJ2501		

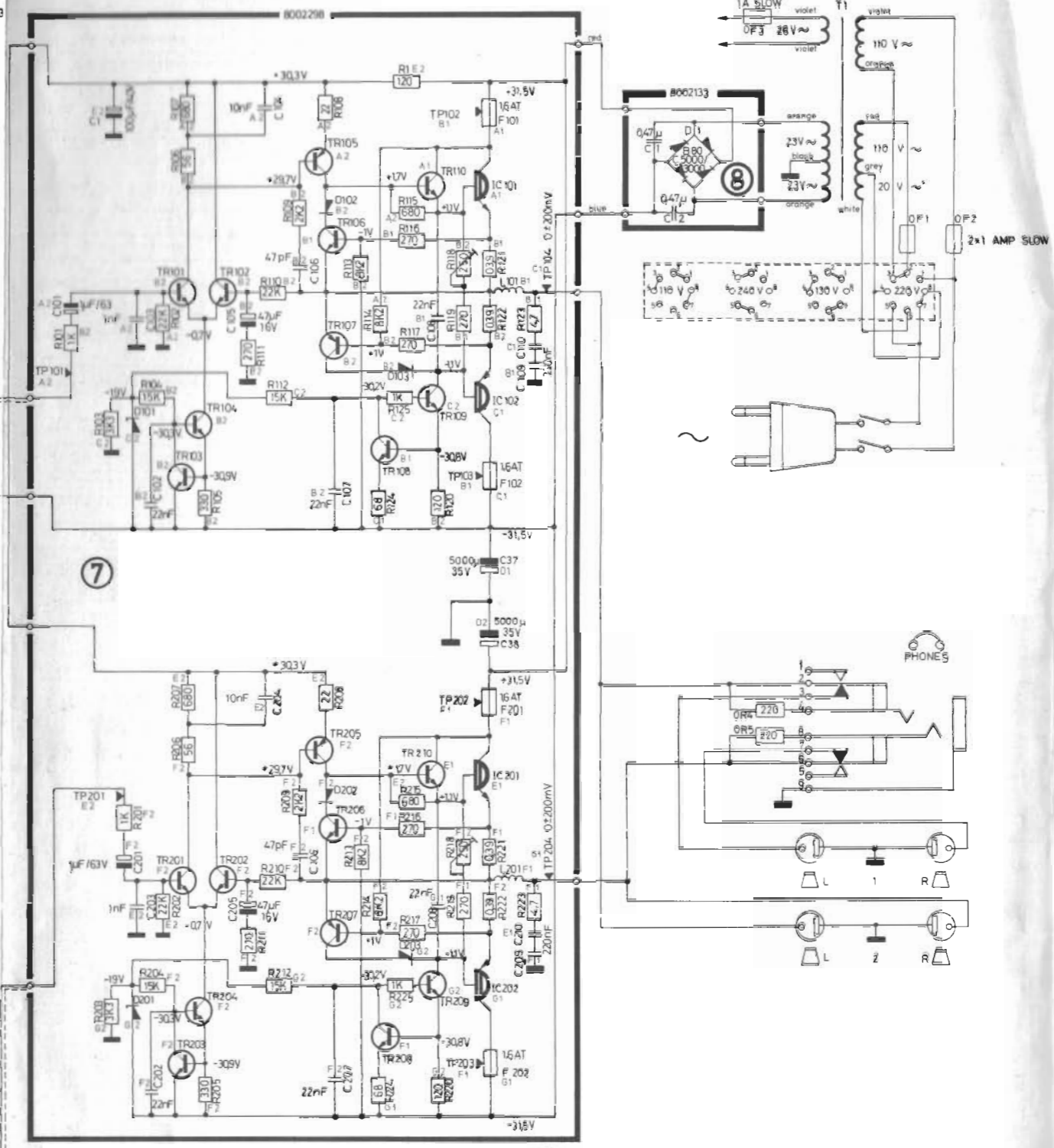
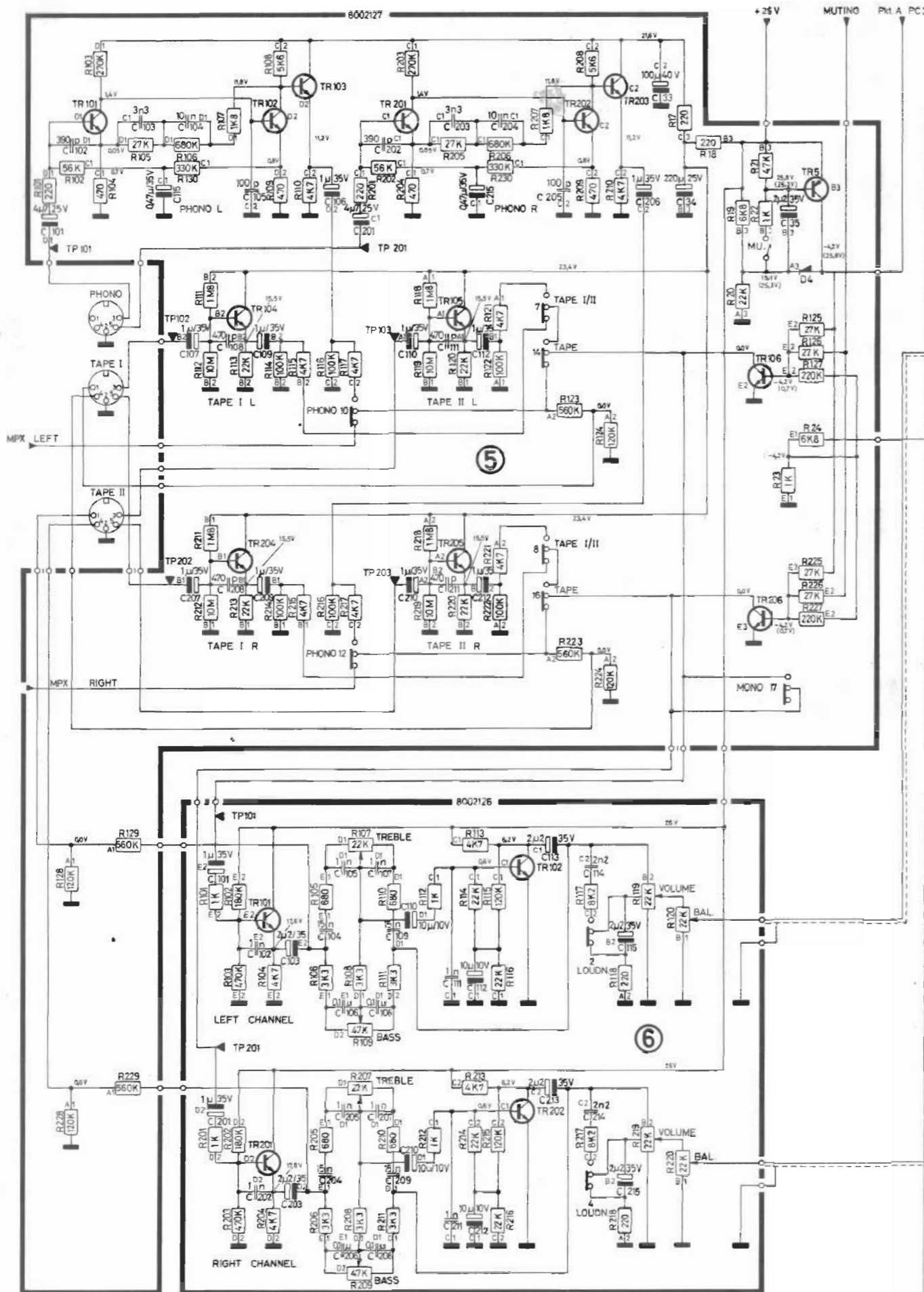


DIAGRAM TIL BEOMASTER 2000, TYPE 2801, FRA NR: 143001
 DIAGRAM FOR BEOMASTER 2000, TYPE 2801, AS FROM NO: 143001
 DIAGRAM FÜR BEOMASTER 2000, TYP 2801, AB NR: 143001

- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
- 1 LOUDN.
 - 2 TAPE I/I/
 - 3 PHONO
 - 4 TAPE
 - 5 MONO

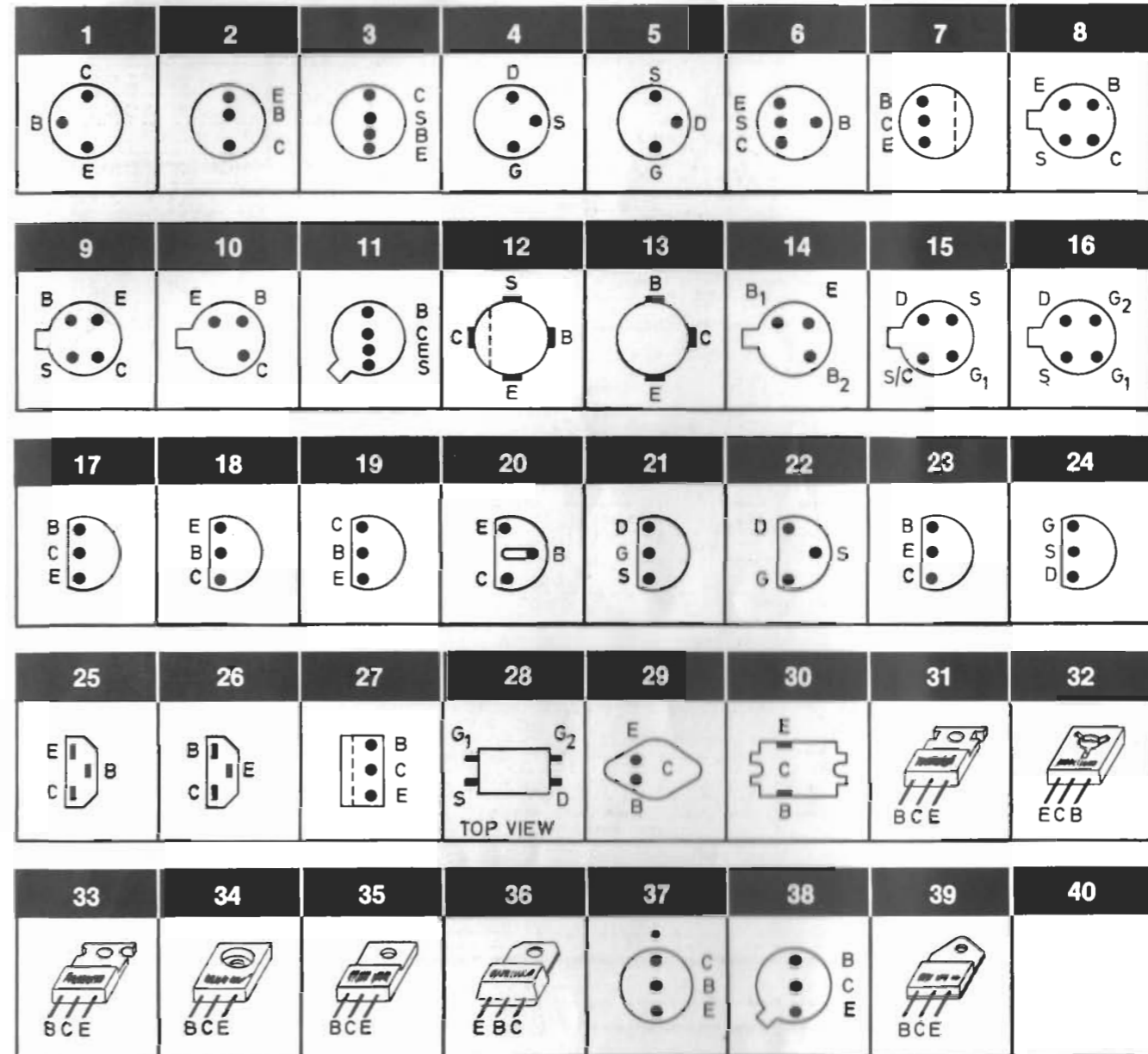
INDKLÆBES PÅ SIDE 2-7. TO BE PASTE ON PAGE 2-7. AUF SEITE 2-7 einkleben

TRANSISTOR AND IC LIST

1TR1	8320119	4	U 1981 E
1TR2		21	2N 5245
		21	TIS 88 A
1TR3	8320136	4	U 1981 E
		5	U 1837 E
		21	2N 5245
		21	3 C 2
		22	3 C 2 P
		21	TIS 88 A
1TR4	8320112	26	BF 195
2TR1	8320311	23	BF 240
2TR2	8320285	20	BC 183 C
2TR3		20	BC 183 CK
		17	BC 183 CL
2TR4	8320200	19	MPS 6515
2TR5		20	BC 182 B
		20	BC 182 BK
		17	BC 182 BL
		18	BC 237 B
		20	BC 171 B
2TR6	8320152	20	BC 212 B
		20	BC 212 BK
		17	BC 212 BL
		10	BC 261 B
		20	BC 251 B
		18	BC 307 B
2TR7	8320323	19	MPS A05
2TR8	8320240	32	BD 136
		32	BD 136 W
2TR9	8320200	19	MPS 6515
2TR10		20	BC 182 B
2TR11		20	BC 182 BK
		17	BC 182 BL
		18	BC 237 B
		20	BC 171 B
2IC1	8340033		TCA 420 A
2IC2	8340028	19	MPS A13
2IC3		19	SPS 5418
2IC4	8340032		MC 1310 Q
			CA 3010 Q

3TR1	8320119	4	U 1981 E
		21	2N 5245
		21	TIS 88 A
5TR1	8320108	10	BC 108 B
5TR2		1	BC 113
5TR3		18	BC 238 B
		20	BC 548 B
		20	BC 183 B
		17	BC 183 BL
		20	BC 183 BK
		19	MPS 6515
		1	BC 114
		20	BC 172 B
5TR4	8320324	19	MPS A55
5TR5	8320161	20	BC 212 B
		20	BC 212 BK
		17	BC 212 BL
		20	BC 251 B
5TR101/201	8320344	20	BC 384 B
5TR102/202		20	BC 384 BK
		17	BC 384 BL
		20	BC 550 B
5TR103/203	8320097	20	BC 547 B
		18	BC 237 B
		20	BC 171 B
		19	BC 317 B
		20	BC 182 B
		17	BC 182 BK
		1	BC 207 B
5TR104/204	8320095	20	BC 549 B
5TR105/205		20	BC 184 B
		17	BC 184 BL
		20	BC 184 BK
5TR106/206	8320366	19	MPS A16
5IC1	8340031		TCA 440
6TR101/201	8320097	20	BC 547 B
6TR102/202		18	BC 237 B
		20	BC 171 B
		19	BC 317 B
		20	BC 182 B
		20	BC 182 BK
		17	BC 182 BL
		1	BC 207 B

7TR101/201	8320377	20	BC 547 B
7TR102/202		20	BC 182 B
		20	BC 182 BK
		17	BC 182 BL
7TR103/203	8320097	20	BC 547 B
7TR104/204		18	BC 237 B
		20	BC 171 B
		19	BC 317 B
		20	BC 182 B
		20	BC 182 BK
		17	BC 182 BL
		1	BC 207 B
7TR105/205	8320365	19	MPS H54
7TR106/206	8320097	20	BC 547 B
		18	BC 237 B
		20	BC 171 B
		19	BC 317 B
		20	BC 182 B
		20	BC 182 BK
		17	BC 182 BL
		1	BC 207 B
7TR107/207	8320161	20	BC 212 B
		20	BC 212 BK
		17	BC 212 BL
		20	BC 550 B
7TR108/208	8320138	20	BC 183 B
		20	BC 183 BK
		17	BC 183 BL
7TR109/209	8320321	19	MPS A06
7TR110/210			
7IC101/201	8340042	39	TIP 141
	8340030	29	MJ 3001
7IC102/202	8340041	39	TIP 146
	8340029	29	MJ 2501



Colour of wires
Kabelfarben
Ledningsfarver

DIODE LIST

1D1	8300050	BB 103 blue
1D2-1D3	8300041	BB 103 green
1D4	8300050	BB 103 blue
2D1-2D4	8300058	SFD 184 1N 4148
2D5	8300053	ZPD 15V BZX 79 15V BZY 88
2D6	8300058	SFD 184 1N 4148
2D7	8300028	ZPD 9,1V BZX 79 9,1V
2D8	8300155	B 40 C 800
2D9-2D10	8300058	SFD 184 1N 4148
2D11	8340059	22V reg.
2D12	8300058	SFD 184 1N 4148
4D1	8300034	ZY 12 LMZ 12
5D1	8300058	SFD 184 1N 4148
5D2	8300024	AA 119
5D3-5D4	8300058	SFD 184 1N 4148
7D101/201	8300029	ZPD 12V 5% BZX 79 12V
7D102/202	8300058	SFD 184
7D103/203		1N 4148

DIODE AND IC CHART

1D1	8300050	BB 103 blue		
1D2 - 1D3	8300041	BB 103 green		
1D4	8300050	BB 103 blue		
2D1 - 2D4	8300058	SFD 184	1N4148	
2D5	8300053	ZPD 15V	BZX 79 15V	BZY 88
2D6	8300058	SFD 184	1N4148	
2D7	8300028	ZPD 9V1	BZX 79 9V1	
2D8	8300155	B40C800		
2D9 - 2D10	8300058	SFD 184	1N4148	
2D11	8340059	ZTK 22		
4D1	8300034	ZY 12	LMZ 12	
5D1	8300058	SFD 184	1N4148	
5D2	8300024	AA 119		
5D3 - 5D4	8300058	SFD 184	1N4148	
7D101/201	8300028	ZPD 9V1	BZX 79 9V1	
7D102/202	8300058	SFD 184	1N4148	
7D103/203	8300058	SFD 184	1N4148	
8D1	8310023	B80C3000/5000		
2IC1	8340033	TCA 420 A		
2IC4	8340032	MC 1310 PQ		
5IC1	8340031	TCA 440		

Colour of wires

Kabelfarben

Ledningsfarver

b	black	schwartz	sort
bl	blue	blau	blå
br	brown	braun	brun
gr	green	grün	grøn
grey	grey	grau	grå
or	orange	orange	orange
r	red	rot	rød
v	violet	violett	violet
wh	white	weiss	hvid
y	yellow	gelb	gul

MALEBETINGELSER FOR DIAGRAM:

Alle DC spændinger er målt i forhold til stel med voltmeter (indre modstand 11 M Ohm).

DC spændinger *uden* parentes er målt med modtageren i stilling FM og antennesignal på 500 μ V (1 mV EMK) med pilottone, volume på 0.

DC spændinger i AM delen *uden* parentes er målt med MW knappen aktiveret og signal på 1 V tilført kunstantenne (1 MHz).

DC spændinger *i* parentes er målt uden signal eller med muting aktiveret.

FM Signalniveauer er målt ved Δf 40 kHz, f mod. 1 kHz og antennesignal på 500 μ V, (1 mV EMK).

AM følsomheder er målt ved 30% modulation, f mod. 1 kHz og 5 W output, udgang belastet med 4 Ohm. Balance, bas, diskant på 0, volume på max.

LF følsomheder er målt ved 40 W output, Balance, bas, diskant på 0, volume på max. Udgang belastet med 4 Ohm, input 1 kHz.

Mekaniske omskiftere er vist i neutral stilling.

CONDITIONS OF MEASUREMENT FOR DIAGRAM:

Alle DC Spannungen sind in Verhältnis zu Chassis mit Voltmeter (innerer Widerstand 11 M Ohm) gemessen.

DC Spannungen *ohne* Klammern sind mit dem Empfänger in Stellung FM und dem Antennensignal von 500 μ V (1 mV EMK) mit Pilotton gemessen. Volume auf 0.

DC Spannungen im AM Teil *ohne* Klammern sind mit aktiviertem MW Knopf und einem Signal von 1 V an die Kunstantenne zu geleitet gemessen.

DC Spannungen *in* Klammern sind ohne Signal oder mit aktiviertem Stummabstimmung gemessen.

UKW Signalniveaus sind bei Δf 40 kHz, f mod. 1 kHz und Antennensignal 500 μ V gemessen. (1 mV FMK).

AM Empfindlichkeiten sind bei 30% Modulation, f mod. 1 kHz und 5 W Output gemessen. Ausgang mit 4 Ohm belastet. Balance, Tiefton, Diskant auf 0, Volume auf max.

NF Empfindlichkeiten sind an 40 W Ausgang gemessen. Balance, Tiefton, Diskant auf 0, Volume auf max. Ausgang mit 4 Ohm, Eingang 1 kHz belastet.

Mechanische Umschalter sind in neutraler Stellung gezeigt.

MESSBEDINGUNGEN FÜR SCHALT-BILD:

All DC voltages are measured in proportion to chassis with voltmeter (inner resistance 11 M Ohm).

DC voltages *without* brackets are measured with the receiver in position FM and an aerial signal of 500 μ V (1 mV EMK) with pilot signal, volume on 0.

DC voltages in the AM section *without* brackets are measured with the MW button activated and a signal of 1 V, supplied to the dummy load.

DC voltages *with* brackets are measured without signal or with muting activated.

FM signal levels are measured at Δf 40 kHz, f mod. 1 kHz and aerial signal 500 μ V. (1 mV EMK).

AM sensitivities are measured at 30% modulation, f mod. 1 kHz and 5 W output, output loaded with 4 Ohm. Balance, bass, treble on 0, volume on max.

AF sensitivities are measured at 40 W output. Balance, bass, treble on 0, volume on max. Output loaded with 4 Ohm, input 1 kHz.

Mechanical switches are shown in neutral position.

TESTPUNKTER/TESTPOINTS/TESTPUNKTE

0TP1	Tuning voltage
0TP2	AGC voltage
	Aerial signal \ll 50 μ V, AGC voltage 3,5 V
	Aerial signal 500 μ V, AGC voltage 3 V
	Aerial signal \ll 50 mV, AGC voltage - 2 V
2TP4	Detector adjustment
2TP5	Detector adjustment
2TP6	IF adjustment
2TP7	Tuning indicator circuit
	Aerial signal \geq 5 μ V, 2TP7 5,4 V
	Aerial signal $<$ 5 μ V, 2TP7 0 V
2TP9	Osc. adjustment (2C34) 3 V p.p. square-wave 10 kHz.
5TP5	Osc, 175 mV (f , aerial 1 MHz)
5TP6	Aerial signal 1 V, 5TP6 0,6 V DC,
	Aerial signal 0 V, 5TP6 0,06 V DC.
5TP7	Aerial signal 1 V, 5TP7 0,4 V DC,
	Aerial signal 0 V, 5TP7 0,03 V DC.
5TP8	Aerial 1 V, 5TP8 0,4 V DC,
	Aerial signal 0 V, 5TP8 0,08 V DC.
5TP9	Aerial signal 1 V, 5TP9 0,57 V DC,
	Aerial signal 0 V, 5TP9 0,3 V DC.

7TP102	31,5 V
7TP202	31,5 V
7TP103	0 V \pm 200 mV
7TP203	0 V \pm 200 mV

FM SIGNALNIVEAUER/FM SIGNAL-LEVELS/UKW SIGNALNIVEAUS

2TP1	8 mV RF
2TP2	600 mV RF
2TP3	40 mV RF
2TP8	175 mV AF (AFC on),
	30 mV 19 kHz level (pilot 9%)
2TP10	600 mV AF (AFC on)
2TP11	600 mV AF (AFC on)

FØLSOMHEDER/SENSITIVITIES/EMPFINDLICHKEITEN

5TP1	15 μ V
5TP2	75 μ V
5TP3	20 mV
5TP4	20 mV
5TP101	2,4 mV
5TP201	2,4 mV
5TP102	175 mV
5TP202	175 mV
5TP103	175 mV
5TP203	175 mV

6TP101	170 mV
6TP201	170 mV

7TP101	160 mV
7TP201	160 mV
7TP103	12,7 V
7TP203	12,7 V

From this it will be seen that the output voltage, V_{O1} , is positive when the two input voltages V_1 and V_2 have opposite polarity, and negative when the input voltages have identical polarity.

The IF signal is fed to the V_{in} terminals.

The phase shift network Z_1 shifts the phase between the two input voltages, V_1 and V_2 , as a function of the frequency applied.

From the time diagrams it will be seen that the DC value of the output voltage (V_{O2}) is zero when the phase shift is 90° ; negative when the phase shift is $< 90^\circ$ and positive when the phase shift is $> 90^\circ$.

If V_{in} is a frequency-modulated signal, the phase between V_1 and V_2 will be shifted "in step" with the modulation, and the output voltage V_{O2} will be proportional thereto and is consequently the demodulated signal.

The demodulated signal is taken off at pins 5 and 6 of 2IC1 for AFC and balance light. The signal from pin 6 is fed to the stereo decoder.

TUNING AND AFC

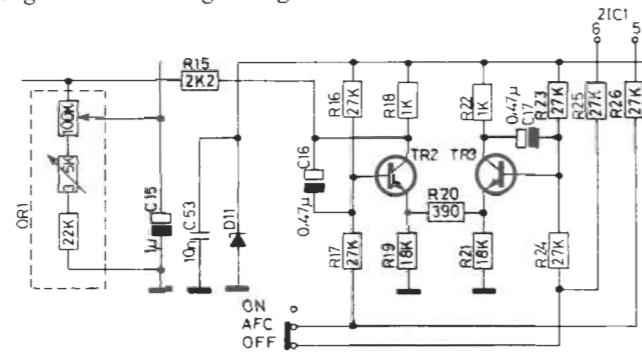
The signals from pins 5 and 6 are fed to the AFC circuit which consists of a differential amplifier, 2TR2 and 3.

The differential amplifier ensures that only differential signals from pins 5 and 6 will affect the tuning.

This arrangement prevents supply voltage variations from affecting the tuning.

Tuning voltage is taken off from the collector of 2TR2.

It is this voltage which is used as AFC voltage seeing that an error voltage from the detector will cause a voltage change at the collector of 2TR2 and thereby regulate the tuning voltage.

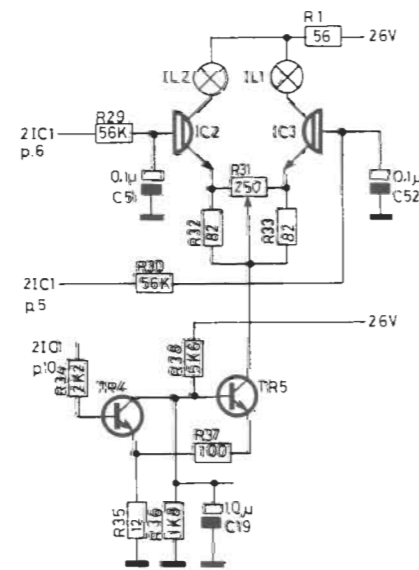


INDICATOR BALANCE

The signals from pins 5 and 6 are also used for indicator balance. They are applied to the bases of 2IC2 and 3.

When the receiver is tuned correctly to a station, the lamps in the collector circuits of 2IC2 and 3 will show equal brilliance. However, 2IC2 and 3 can draw current only if 2TR5 is conductive. Pin 10 of 2IC1 will carry a 10W level when an IF signal is present. This level will cut off 2TR4, and 2TR5 will consequently draw current.

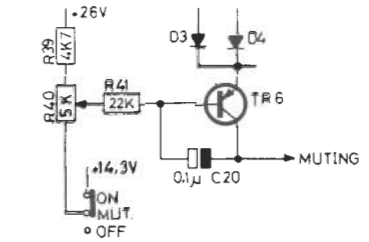
The voltage change at the collector of 2TR4 is also fed to the stereo decoder, cancelling the stereo decoder cut-off in the presence of an IF signal.



MUTING ON FM

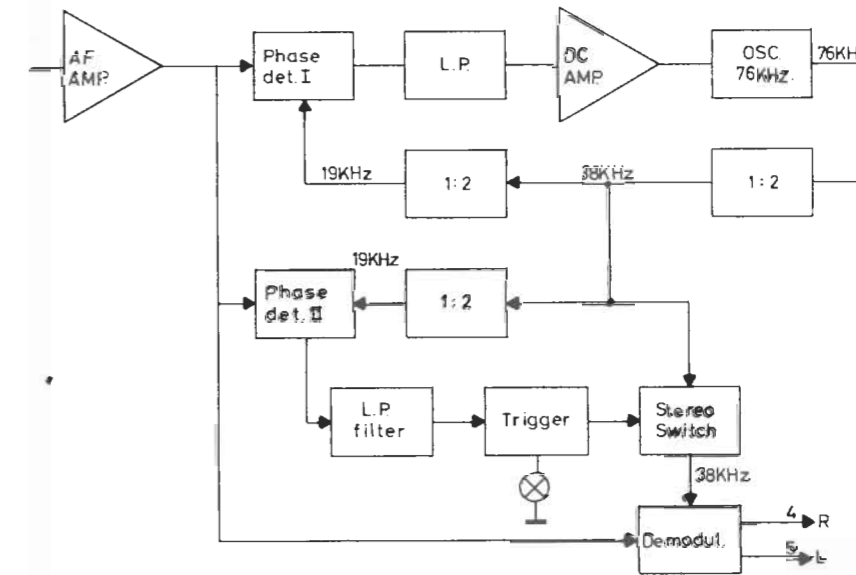
For tuning across the FM dial, the muting feature may be cut in by operating the MUTING switch, thereby silencing the receiver between stations. The collectors of 2IC2 and 3 connect through 2D3 and 4 to the emitter of 2TR6. In case no current flows through one or both transistors (detuning or off-station), 2TR6 will be conductive, and a positive voltage will be applied to the muting circuit 5TR106 and 206, which shorts the signal to chassis potential.

2C20 prevents deep strong bass frequencies from causing periodic muting.



STEREO DECODER

The AF signal is fed to pin 2 of the stereo decoder 2IC4.



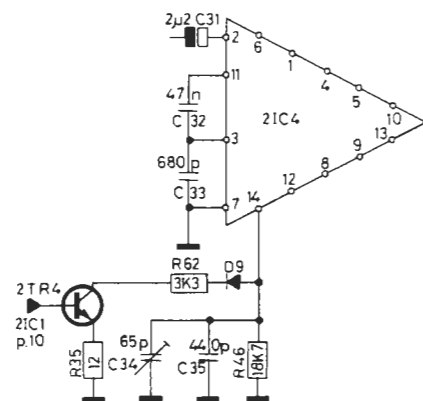
The block diagram shows 2IC4. As will be seen, the IC contains an oscillator operating at 76 kHz. The internal oscillator is phase-locked by the 19 kHz content of the MPX signal. This principle provides a high order of long-term stability.

The MPX signal from the detector is fed to the amplifier, whose output is fed to the demodulator and the phase detectors.

The phase detectors compare the 19 kHz signal from the internal oscillator with the 19 kHz content of the MPX signal. Correction voltage from phase detector I (depending on the phase relations between external and internal 19 kHz) is fed via a lowpass filter and a DC amplifier to a DC-controlled 76 kHz oscillator. This oscillator is adjustable from outside with trimmer capacitor 2C34.

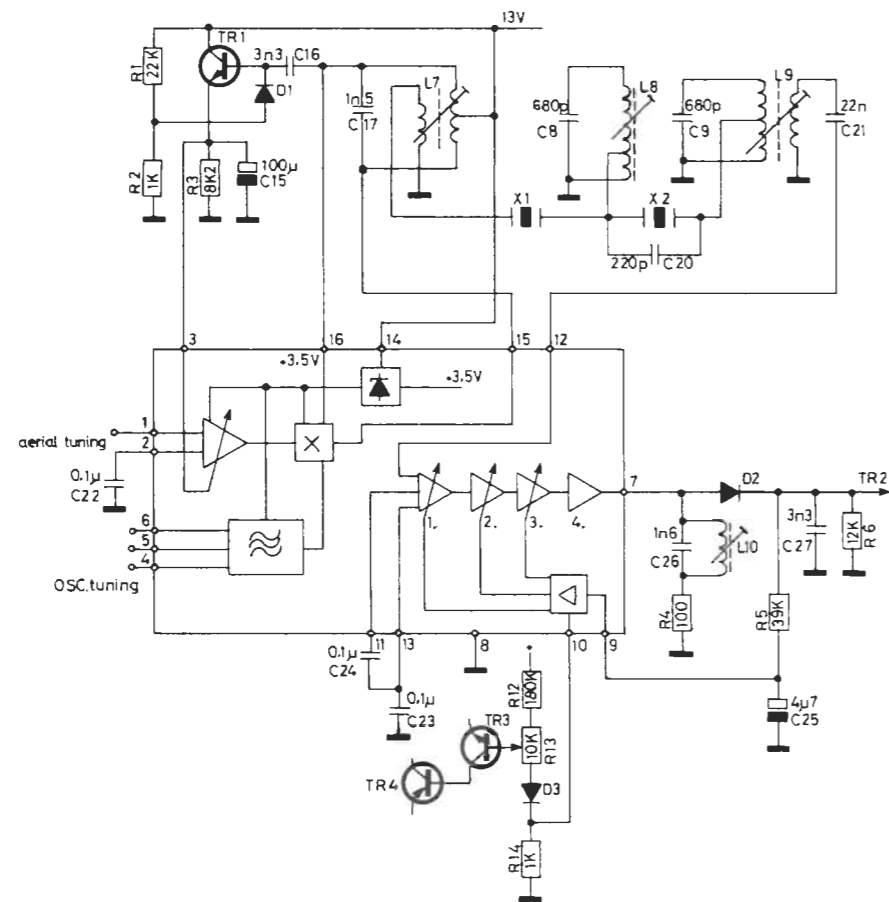
To turn on the stereo indicator and activate the stereo switch, both 19 kHz from the MPX signal and 19 kHz from the internal oscillator must be present. If this condition is met, a trigger circuit is activated from phase detector II to turn on the lamp and feed 38 kHz via the stereo switch to the demodulator. The stereo signal can now be taken off at pins 4 and 5.

If the IF signal is too weak, pin 14 will be pulled towards chassis potential through 2D9 and 2TR4, and the internal oscillator will stop. The IC circuit will now operate only as an amplifier, and the signal output will be mono.



From pins 4 and 5, the signal is fed to 2TR10 and 2TR11 where separation between right and left channels can be adjusted with 2R54. The AF signals moreover pass through two 19/38 kHz filters before being fed to the pushbutton switch.

The AM section is based on 5IC1. This IC contains an AGC-controlled RF stage, oscillator, mixer, and an AGC-controlled IF amplifier.



The signal picked up by the aerial is fed to pins 1 and 2. The oscillator tank circuit is connected to pins 4, 5 and 6. After mixing, a symmetrical IF signal is taken off at pins 15 and 16. Part of this signal provides, via 5TR1, RF AGC for the signal frequency circuit through pin 3. After IF tuning, effected both by ceramic filters and by LC circuits, the IF signal is fed to pin 12 for amplification, whereupon it is taken off at pin 7. From there, the signal passes to the AM detector whereupon it is routed through an emitter follower, 5TR2, before being fed to the pushbutton switch. Part of the DC output of the detectors is taken off, the AF component being filtered off by 5R5 and 5C25; and the resulting voltage is fed to pin 9 as IF AGC bias.

AM

Pin 10 carries a voltage which varies in step with RF signal strength. This voltage is employed, via 5TR3 and 4, for tuning indication. The AM section receives supply voltage only with the LW or MW button operated.

PHONO

The phono input is a low impedance input, using an RIAA compensated preamplifier consisting of three transistors 5TR101, 102 and 103 for the left channel and 5TR201, 202 and 203 for the right channel.

TAPE

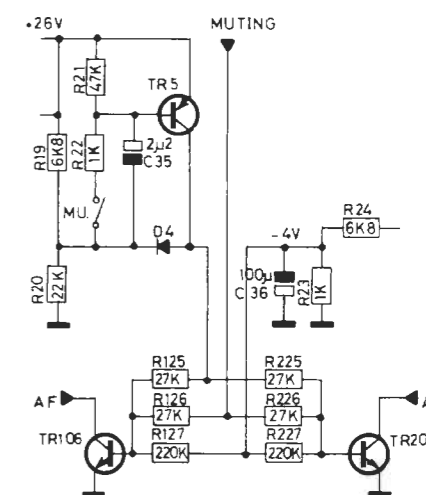
There is provision for connection of two tape recorders. Both tape inputs are high impedance ones, and recording and playback on both TAPE I and TAPE II are possible. TAPE I has a monitoring function, and recording from TAPE I to TAPE II can be performed.

TONE AMPLIFIER

From FM, PHONO, or TAPE, the AF signal passes to the tone amplifier, which consists of two transistors, 6TR101 and 102 in the left channel, and 6TR201 and 202 in the right channel. The amplifier contains bass and treble regulation, loudness switch, and volume and balance controls.

MUTING

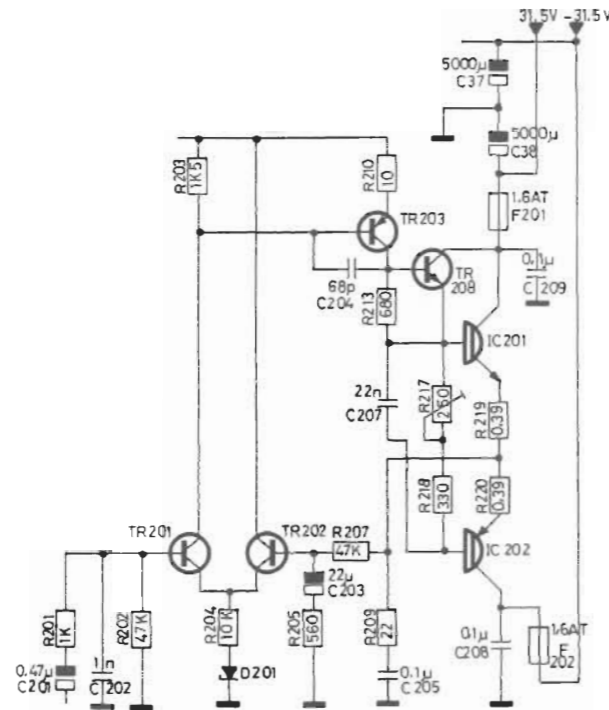
The muting circuit is composed of 5TR106, 206 and 5TR5.



Through 5TR5, positive voltage is applied to the base of 5TR106 and 206 each time one of the program selector buttons (MU) is operated. After the button has been released, the muting transistor 5TR5 will remain conductive for some time due to charging of 5C35 through the transistor's diode junction and through 5R21. Activation of the muting circuit will cause 5TR106 and 206 to short the AF signals to chassis potential, but otherwise the transistors will be prevented from conducting, by a negative bias of -4V from voltage divider 5R24/23.

AF OUTPUT

The output amplifier has high gain and heavy inverse feedback, resulting in very low distortion and low output impedance. Supply voltage for the output amplifier is obtained directly from the rectifier, decoupled by 7C37 and 38. Both plus and minus voltages are employed (split supply).

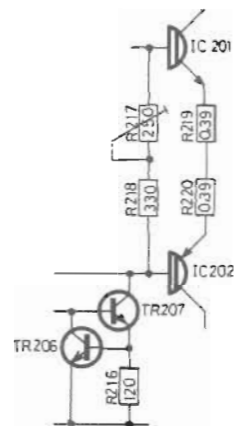


The signal is fed to the base of 7TR201 (right channel), which is one half of a differential circuit with 7TR202.

The AF signal is heavily amplified by 7TR201 and 203 whereupon it is passed to the output transistors, which operate in a Darlington circuit, via emitter follower 7TR208. From the output, part of the signal is taken off and fed through 7R207 to the base of 7TR202 as inverse feedback.

Reasonably constant no-signal current in output transistors 7IC202 and 202 is ensured by a constant-current generator 7IC206, 207 and 216. No-signal current is adjusted with 7R217.

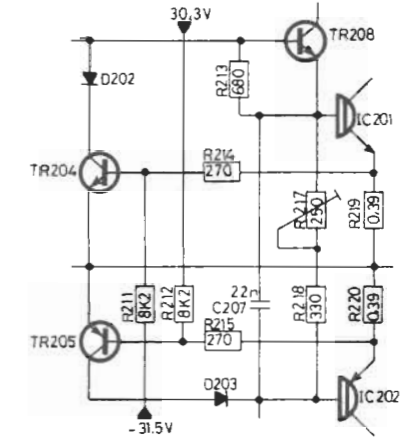
The no-signal current is made independent of output transistor temperature by placing 7TR206 as a sensor transistor on the same heat sink with the output transistors. A temperature increase will make the no-signal current attempt to increase, but at the same time the voltage across 7R216 (base/emitter junction of 7TR206) and hence across 7R217 will drop, thus causing the no-signal current to return to its original value.



OUTPUT PROTECTION

The output is protected against overloading or short-circuits by 7TR204 and 205, which "feel" the voltage drop across the emitter resistors of the output transistors. Excessive output-circuit current will cause 7TR204 and 205 to start drawing current, thereby reducing the bias to the output transistors, as a result of which the current will drop.

In order to protect the speakers against DC voltage in case of a defective output circuit, two 1.6 A slow-blow fuses are provided in either channel. In order to be capable of standing the current that will flow before the fuse blows, the speakers must have a minimum rating of 40W r.m.s.

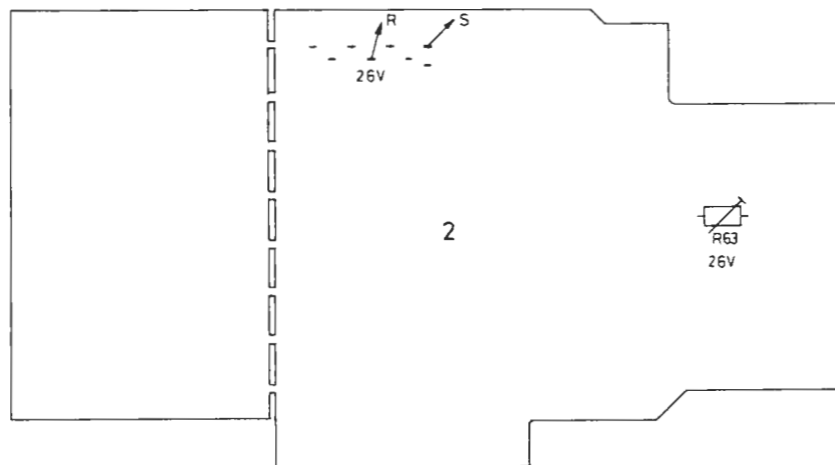


POWER SUPPLY

The stabilised power supply consist of 2TR8 and 9 and delivers 26V for use in the preamplifiers, tone amplifiers, and the AFC and indicator circuit. From the 36V supply, additional stabilisation is performed with 2TR7. The resulting voltage, 14.3V, is used in the tuner, FM-IF Section, decoder, and AM section.

ADJUSTMENTS

Set receiver to FM. With potentiometer 2R63 adjust for 26V.

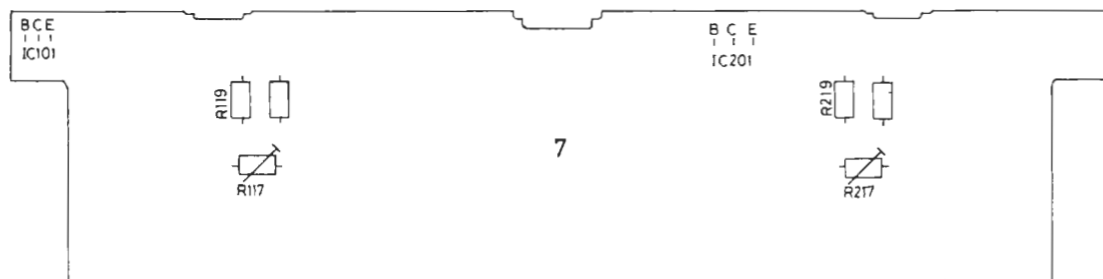


NO-SIGNAL-CURRENT

Adjust no-signal current with receiver cold and volume control turned down.

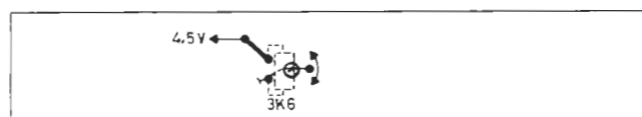
SPEAKERS MUST NOT BE CONNECTED

With 7R117 (7R217) adjust for 25 mA collector current in 7IC101 (7IC202) or 10 mV across 7R119 (7R219). When receiver has been on for 10 minutes, with volume control turned down, check no-signal current and again adjust for 25 mA or 10 mV across emitter resistor.



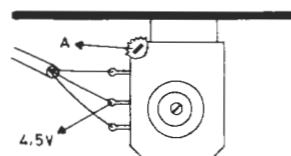
TUNING VOLTAGE

Depress P1 and turn preset potentiometer toward stop in the left side (the low end of the scale).



With 3R6 (assessible from the underside of PC3) adjust to 4.5V in relation to ground.

Depress FM and turn dial pointer to the left toward stop.



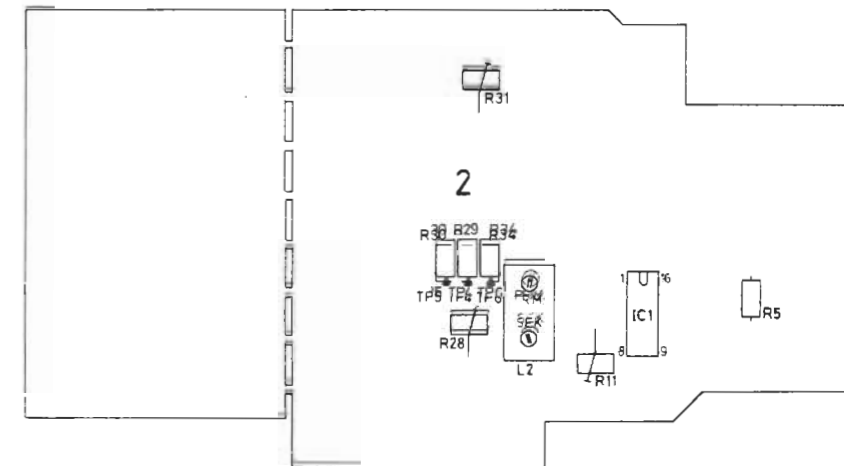
With potentiometer A adjust to 4.5V in relation to ground.

FM IF AND DETECTOR

Connect sweep generator to aerial input. Set generator to deliver 50 μV aerial input signal at 97 MHz, Δf 0.5 MHz.

Connect oscilloscope:
Y1 to 2TP6 (0.2 V/cm)
Y2 to 2TP4 (0.5 V/cm)

Connect voltmeter between 2TP4 and 5.



IF ADJUSTMENT

Depress FM button and set tuning control to 97 MHz on dial (AFC in "OFF" position).

With 1L7 and 1L8 adjust for max. symmetrical IF curve.

DETECTOR ROUGH ADJUSTMENT

With 2L2 primary adjust "S"-curve for best symmetry.
With 2L2 secondary adjust "S"-curve for best linearity.

DETECTOR FINE ADJUSTMENT

Short 2R5 (at tuner terminal). With "det. bal." 2R28 adjust for 0V between 2TP4 and 5 ($\le \pm 10 \text{ mV}$). Remove short.
With 2L2 primary adjust for 0V between 2TP4 and 5.
With 2L2 secondary adjust for max. and linear "S"-curve.

TUNER

Set tuning control to 89.0 MHz on dial.

Set sweep generator to 89.0 MHz.

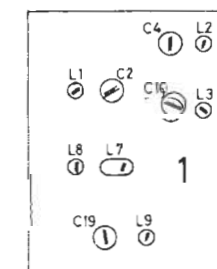
With 1L1, 2, 3, and 9 adjust for max. IF curve at 2TP6.

Set tuning control to 102 MHz on dial.

Set sweep generator to 102 MHz.

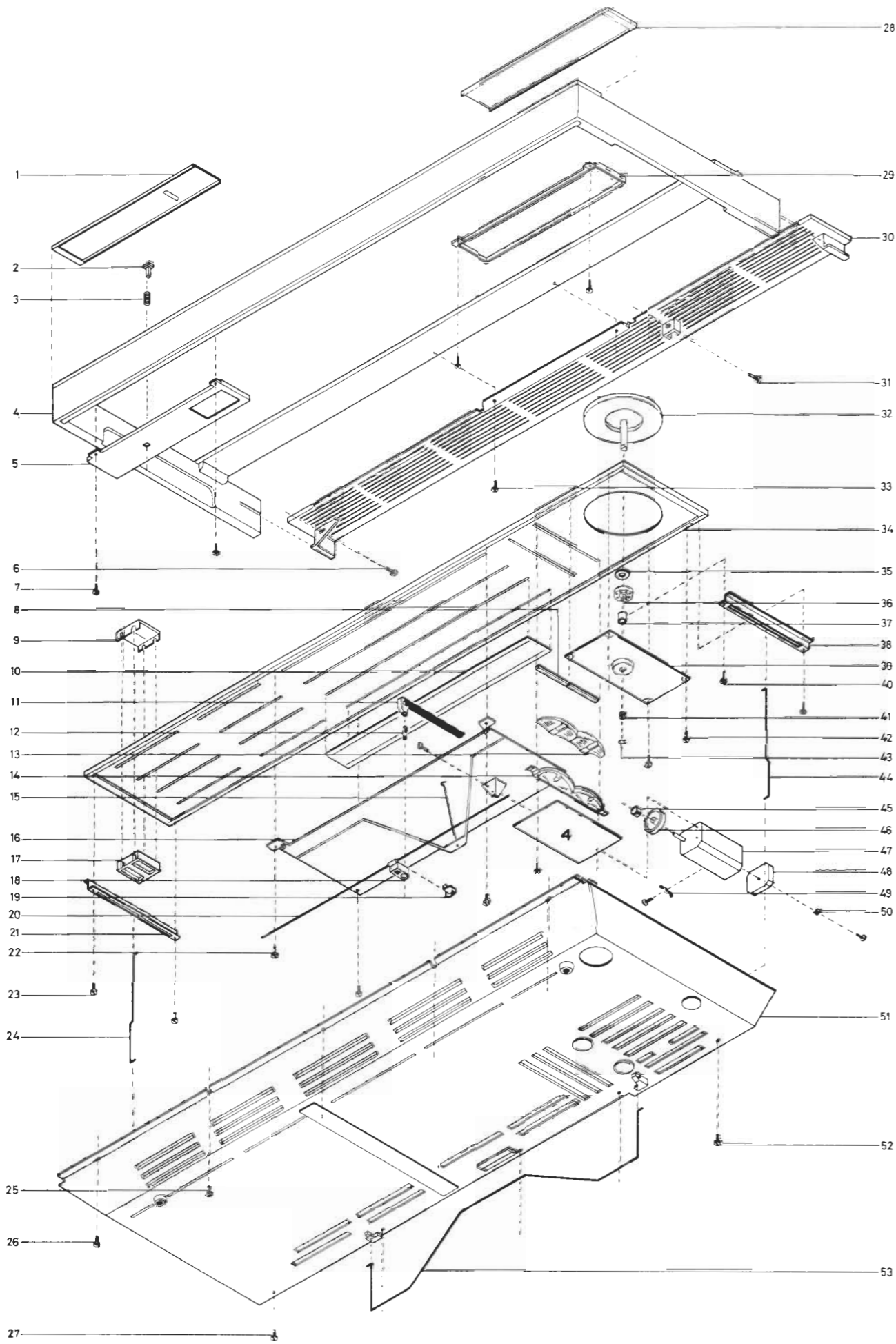
With 1C2, 4, 10 and 19 adjust for max. IF curve at 2TP6.

Check dial alignment - repeat adjustment procedure if necessary.



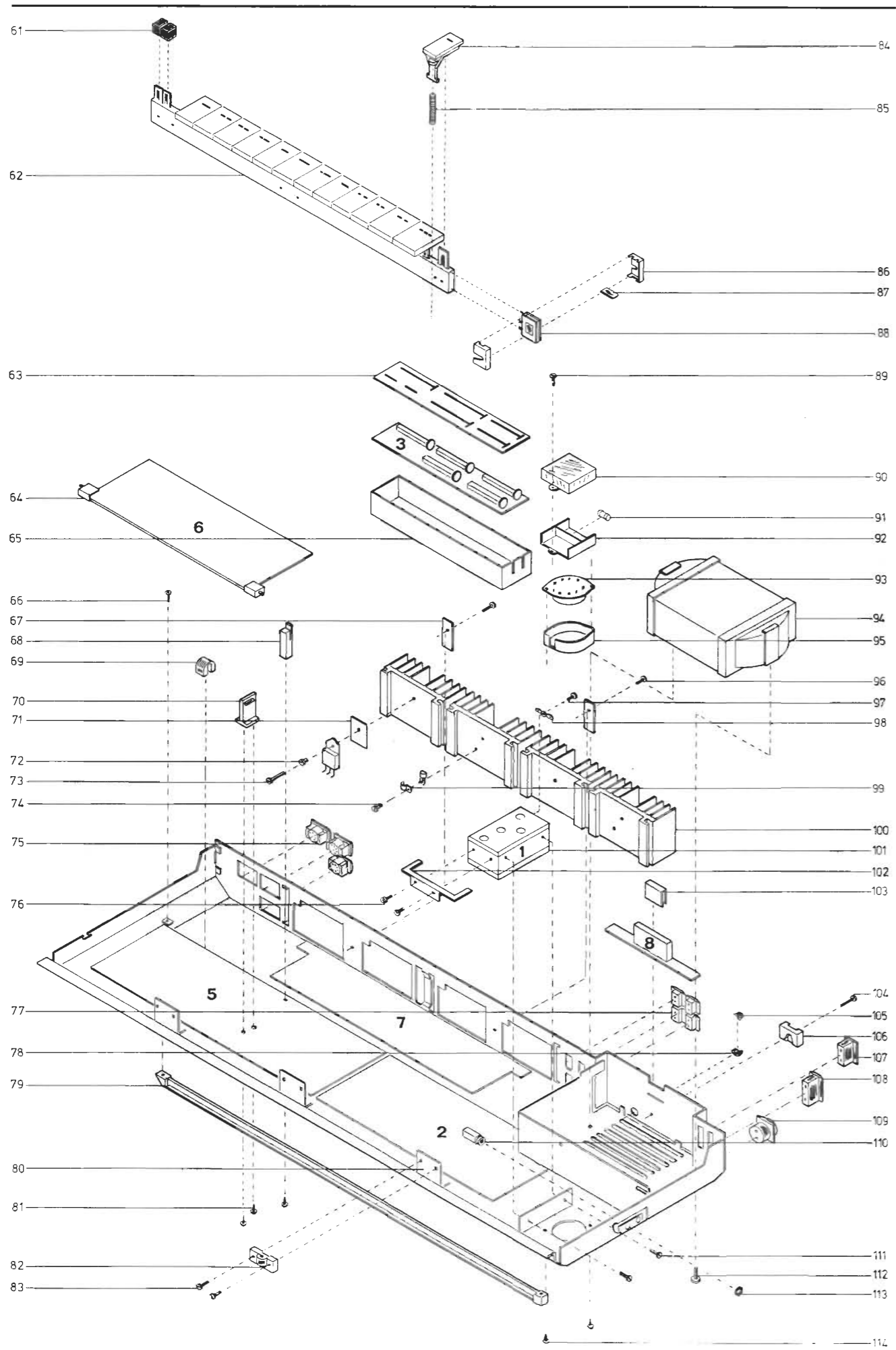
BALANCE LIGHT

Tune in an FM station correctly (0V between 2TP4 and 5).
With 2R31 adjust for identical brilliance of both lamps.

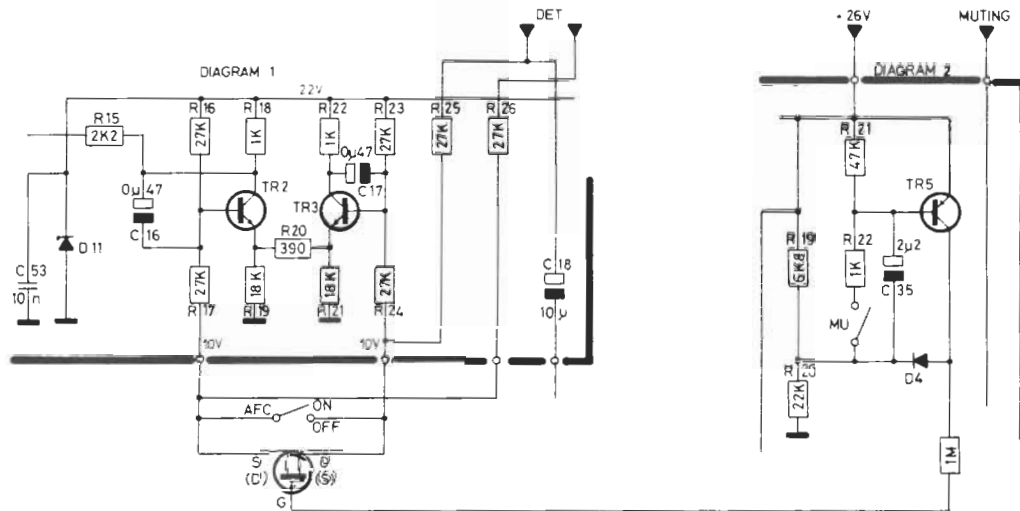


PARTS LIST FOR
BEOMASTER 2000, TYPE 2801

- 1 3168051 Cover, aluminium
- 3168053 Cover, black
- 2 3015048 Locking plate
- 3 2818036 Spring
- 4 3412141 Cabinet, teak
- 3412143 Cabinet, rosewood
- 3412144 Cabinet, oak
- 3412145 Cabinet, white
- 5 3164168 Holder
- 6 2038926 Screw, black
- 7 2013200 Screw
- 8 3370071 Window, green
- 3370072 Window, red
- 9 3190058 Slide pointer
- 10 3199040 Pointer glass
- 11 3190059 Pointer
- 12 8230046 Bulb
- 13 3370073 Lamp housing
- 14 3131081 Housing
- 15 2850070 Arm
- 16 3300051 Plate
- 17 3015049 Slide
- 18 3015056 Slide
- 19 3164167 Cover
- 20 2834036 Shaft
- 21 2542383 Bracket
- 22 2038208 Screw
- 23 2038208 Screw
- 24 3151131 Holder
- 25 2038208 Screw
- 26 2038216 Screw
- 27 2038926 Screw, black
- 28 3168050 Cover, aluminium
- 3168052 Cover, black
- 29 3152124 Holder
- 30 3444067 Ventilating grille
- 31 2038926 Screw, black
- 32 2794059 Flywheel, aluminium
- 2794058 Flywheel, black
- 33 2013200 Screw
- 34 3191060 Control panel, aluminium
- 3191061 Control panel, black
- 35 2622234 Washer
- 36 2900005 Ball bearing
- 37 2622217 Bushing
- 38 2542383 Bracket
- 39 3150040 Bearing bushing
- 40 2038208 Screw
- 41 2724032 Cord pulley
- 42 2038208 Screw
- 43 2390064 Seeger circlip 5 mm
- 44 3151131 Holder
- 45 2395031 Spire
- 46 2724033 Cord pulley
- 47 4310011 Variable capacitor
- 48 5300086 Potentiometer 100 kohms
- 49 7530013 Solder tag
- 50 2622110 Washer
- 51 3454174 Bottom
- 3164174 Cover for "Headphones"
- 52 2038926 Screw, black
- 53 2514029 Foot



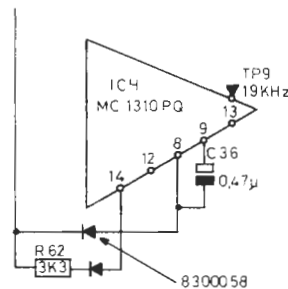
- 61 2775314 Button, LOUDN
- 2775315 Button, TAPE
- 62 7400123 Switch mounted, aluminium
- 7400124 Switch mounted, black
- 2775367 Button PHONO
- 2775378 Button PHONO, black
- 2775368 Button TAPE
- 2775379 Button TAPE, black
- 2775369 Button MONO
- 2775380 Button MONO, black
- 2775370 Button LW
- 2775381 Button LW, black
- 2775371 Button MW
- 2775382 Button MW, black
- 2775372 Button FM
- 2775383 Button FM, black
- 2775373 Button P1
- 2775384 Button P1, black
- 2775374 Button P2
- 2775385 Button P2, black
- 2775375 Button P3
- 2775386 Button P3, black
- 2775376 Button P4
- 2775387 Button P4, black
- 2775377 Button P5
- 2775388 Button P5, black
- 63 3199039 Dial
- 64 3015044 Holder
- 65 3152122 Housing
- 66 2013200 Screw
- 67 2640029 Clamp
- 68 2574053 Support
- 69 2515021 Clamp
- 70 3150028 Support
- 71 3170121 Mica sheet
- 72 2938017 Bushing
- 73 2038926 Screw
- 74 2038926 Screw
- 75 7211049 Socket 5 pol. DIN
- 76 2038206 Screw
- 77 7211047 Socket 2 pol.
- 78 2641062 Locking plate
- 79 3152123 Holder
- 80 2530294 Bracket
- 81 2013201 Screw
- 82 3015045 Guide plate
- 83 2038216 Screw
- 84 2775365 Button OFF
- 2775366 Button OFF, black
- 85 2818037 Spring
- 86 3164067 Cover
- 87 3302159 Insulating piece
- 88 7450029 Mains switch
- 90 3164109 Cover
- 91 6600006 Fuse 1A-T/250 V
- 92 3131101 Housing
- 93 7401001 Mains-voltage switch
- 94 8013127 Mains transformer
- 95 3131050 Housing
- 96 2038926 Screw
- 97 2038206 Screw
- 98 2510104 Clamp
- 99 2816105 Clamp
- 100 3358078 Heat sink
- 101 8050063 Tuner
- 102 2548121 Bracket
- 103 2816114 Clamp
- 104 2038216 Screw
- 105 2641061 Locking plate
- 106 3152006 Holder
- 107 7211043 Socket AM
- 108 7211042 Socket FM
- 109 7211050 Socket 75 ohms
- 110 7210023 Socket PHONES
- 111 2038206 Screw
- 112 2042203 Screw
- 113 2380092 Nut
- 114 2013201 Screw

**MODIFICATIONS
WRONG LOCKING OF PRE-SET FM
STATIONS**


This is due to the fact that 2IC1 does not always produce 0 V detector voltage, pin 5 and 6, when the IF signal at the output of the IC is switched off, e.g. when listening AM. If the AFC is connected, the tuning voltage will change according to the detector voltage produced.

When switching back to FM, another station than the pre-set will be received.

To avoid this a FET no. 8320119 is mounted as shown.

STEREOLAMP ACTIVATED BY NOISE


In some receivers the stereo lamp is activated by noise, and is not switched off until a mono station is tuned in.

This is solved by mounting a diode No. 8300058 as shown.

MAINS TRANSFORMATOR

Because of hum, we have constructed a new mains transformer. It has the same number: 8013127.

LEAD FOR DIAL LAMP

In the first produced receivers the lead for the dial lamps was made of an insufficiently soft material.

This is now replaced by a more soft lead, complete with flex and springs, No. 6273734.