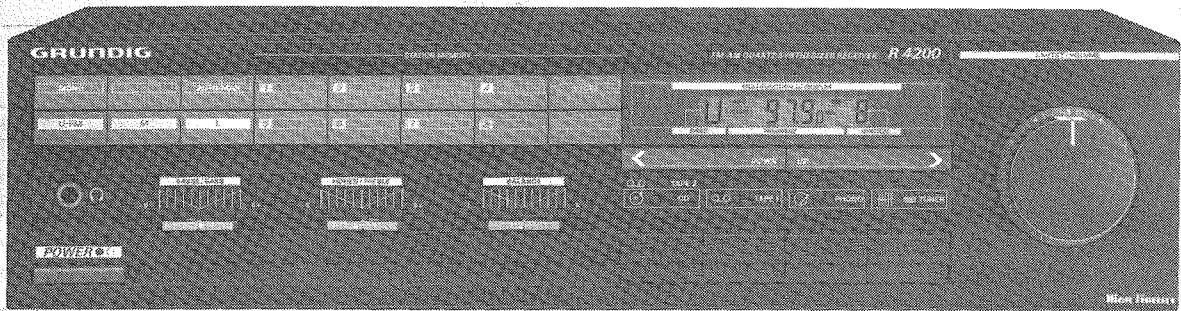




ⓓ Btx \* 32700 #

7/86

R 4200



## Technische Daten

### Empfangsteil

#### Empfangsbereiche

UKW (FM) 87,5... 108 MHz  
 MW 520... 1620 kHz  
 LW 153... 353 kHz

#### FM-Empfindlichkeit (75 Ω, 40 kHz Hub)

UKW-Mono:  $\leq 1 \mu\text{V}$  für 26 dB S/R-Abstand  
 UKW-Stereo:  $\leq 35 \mu\text{V}$  für 46 dB S/R-Abstand

#### Stereo-Umschaltswelle

Stereo ein/aus:  $<20 / <13 \mu\text{V}$  bei 98 MHz an 75 Ω

#### FM-Fremdspannungsabstand

gemessen im Bereich 31,5 Hz... 15000 Hz,  
 bei 40 kHz Hub und 1 mV an 75 Ω,  
 bezogen auf Nennleistung.  
 Spitzenwert nach DIN 45 405/Effektivwert:  
 Mono  $\geq 68/72$  dB; Stereo  $\geq 63/67$  dB

#### FM-Geräuschspannungsabstand

bei 1 mV an 75 Ω gemessen bei 40 kHz,  
 bezogen auf Nennleistung.  
 Spitzenwert nach DIN/Effektivwert über Kurve »A«:  
 Mono  $\geq 70/78$  dB; Stereo  $\geq 63/69$  dB.

#### Übertragungsbereich bei FM-Stereo

von Ant. bis NF-Ausg. 10 Hz - 15 kHz  $\leq 3$  dB

#### Klirrfaktor

Mono/Stereo:  $\leq 0,3/0,45\%$  bei 1 kHz und 40 kHz Hub,  
 gemessen nach DIN 45 500 bei 1 mV an 75 Ω

#### Dynamische Trennschärfe

Mono:  $\geq 70$  dB; Stereo:  $\geq 60$  dB  
 ( $\pm 300$  kHz, bez. auf 40 kHz Hub,  
 -30 dB Störspannung)

#### FM-Übersprechdämpfung

1 mV Antennenspannung, 47,5 kHz Gesamthub  
 1 kHz  $\geq 30$  dB selektiv gemessen.

## Technical Specification

### Receiver Section

#### Waveband Coverage

VHF/FM 87.5... 108 MHz  
 MW 520... 1620 kHz  
 LW 153... 353 kHz

#### FM Sensitivities (75 Ω, 40 kHz deviation)

FM Mono:  $\leq 1 \mu\text{V}$  for 26 dB S/N ratio  
 FM Stereo:  $\leq 35 \mu\text{V}$  for 46 dB S/N ratio

#### Stereo Switching Threshold

Stereo on/off:  $<20 / <13 \mu\text{V}$  into 75 Ω at 98 MHz

#### FM Signal-to-Noise Ratio (Unweighted)

Measured in the range 31.5 Hz... 15000 Hz  
 (deviation 40 kHz and 1 mV into 75 Ω,  
 referred to nominal output power).  
 Peak value to DIN 45 405/rms value:  
 Mono:  $\geq 68/72$  dB; Stereo:  $\geq 63/67$  dB

#### FM Signal-to-Noise Ratio (Weighted)

Measured at 1 mV into 75 Ω (40 kHz deviation,  
 referred to nominal output power).  
 Peak value to DIN/rms value to curve "A":  
 Mono:  $\geq 70/78$  dB; Stereo:  $\geq 63/69$  dB.

#### Frequency Response (VHF/FM)

from aerial to output: 10 Hz - 15 kHz  $\leq 3$  dB

#### Distortion

Mono/Stereo:  $\leq 0,3/0,45\%$  for 1 kHz and 40 kHz  
 deviation, measured to DIN 45 500 at 1 mV into 75 Ω

#### Dynamic Selectivity

Mono:  $\geq 70$  dB; Stereo:  $\geq 60$  dB  
 ( $\pm 300$  kHz, for 40 kHz deviation,  
 -30 dB noise voltage)

#### FM Crosstalk

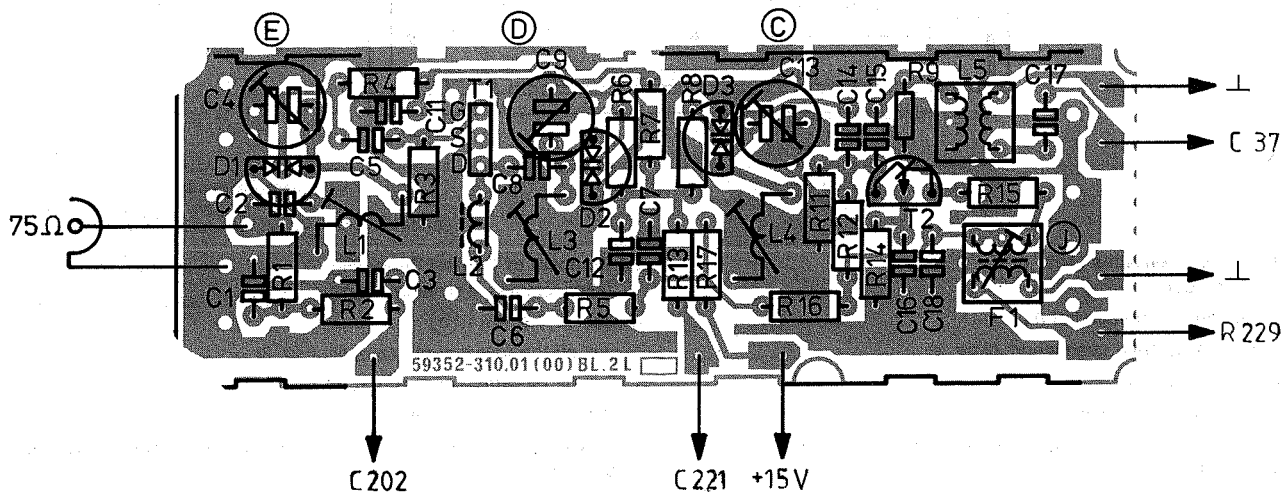
1 mV aerial voltage, 47.5 kHz total deviation;  
 1 kHz  $\geq 30$  dB measured selectively

**HF-Baustein, Lötseite 59420-031.00**

HF MODULE, SOLDER SIDE

MODULE HF, COTE DES SOUDURES

MODULO AF, LATO SALDATURE

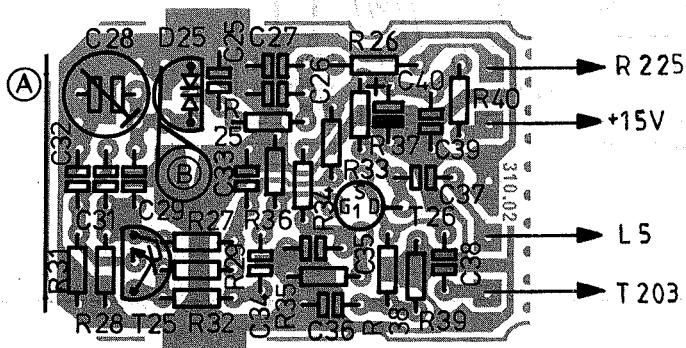


**Oszillator-Baustein, Lötseite 59420-035.00**

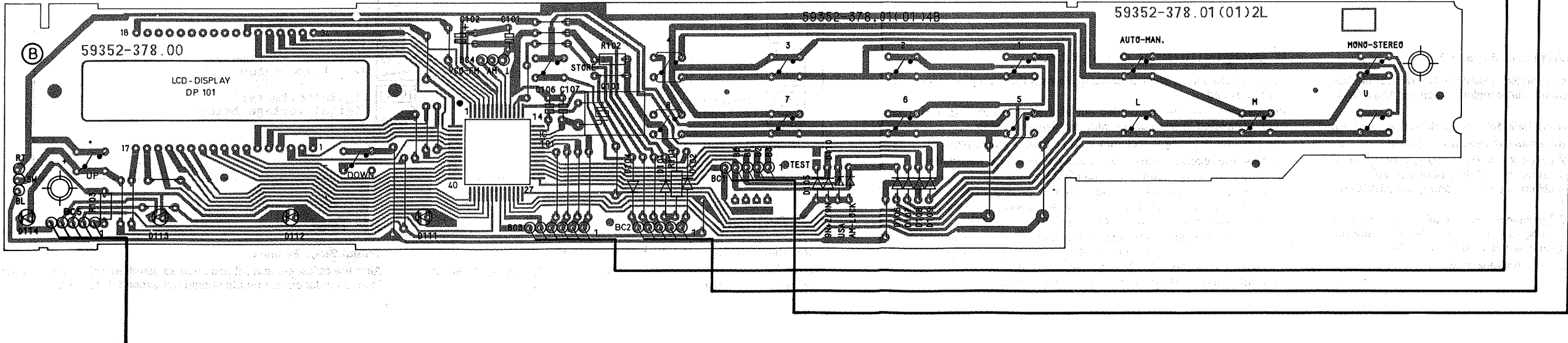
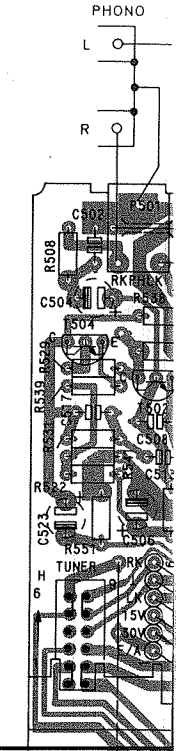
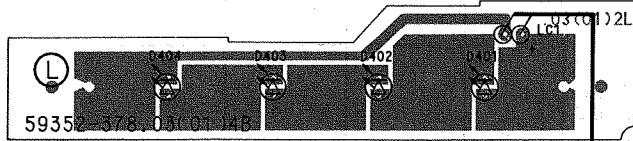
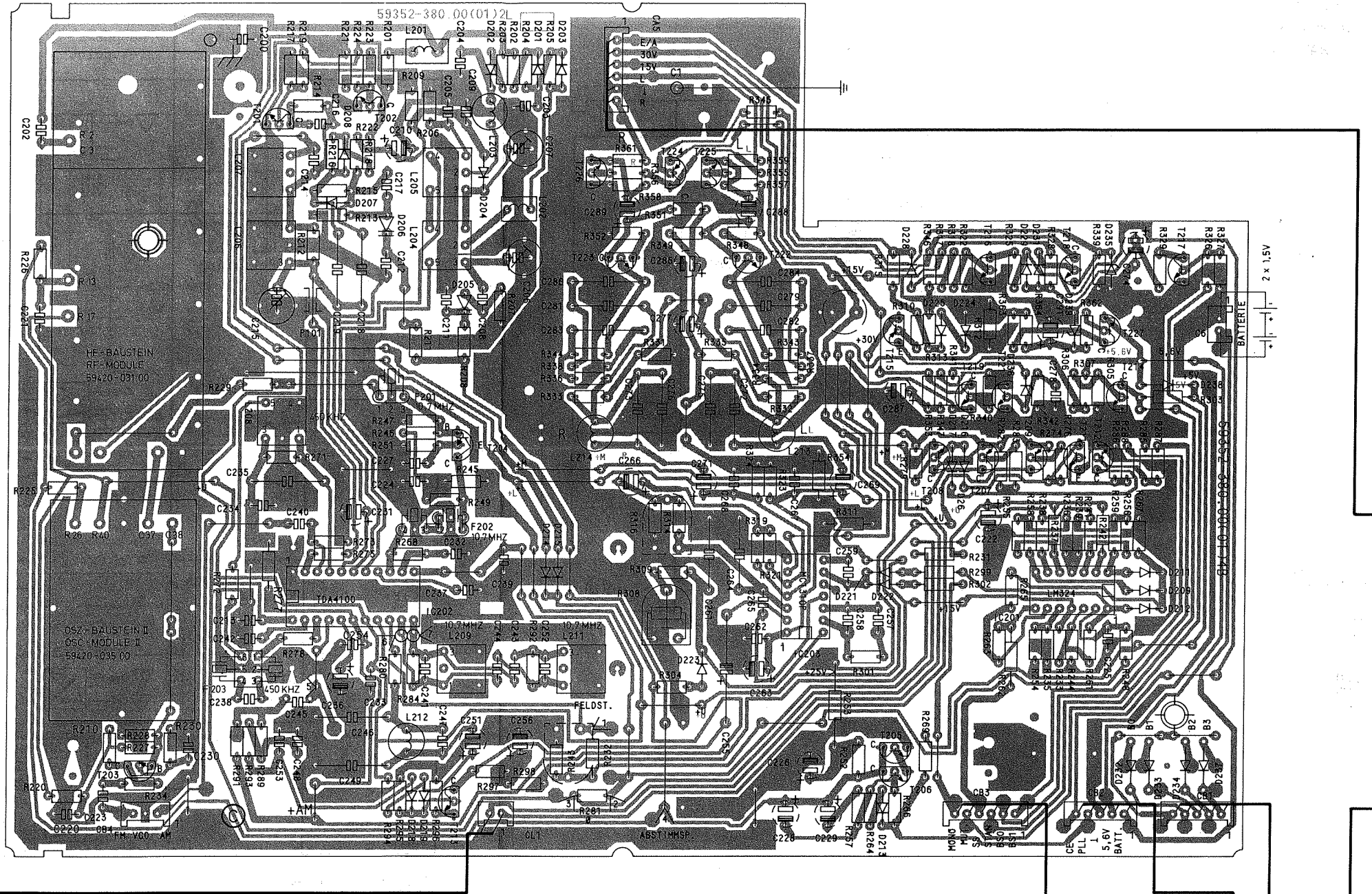
OSCILLATOR MODULE, SOLDER SIDE

MODULE OSCILLATEUR, COTE SOUDURES

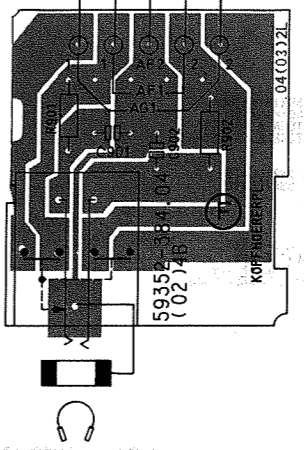
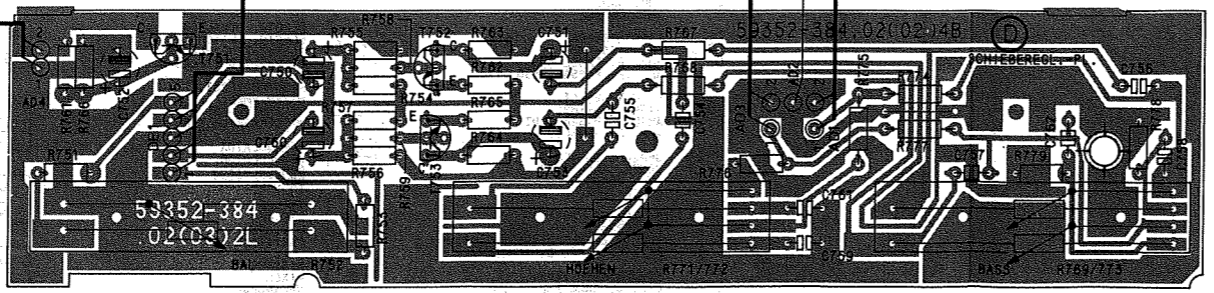
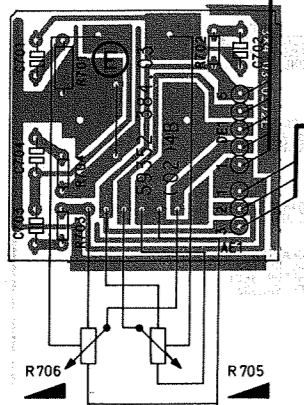
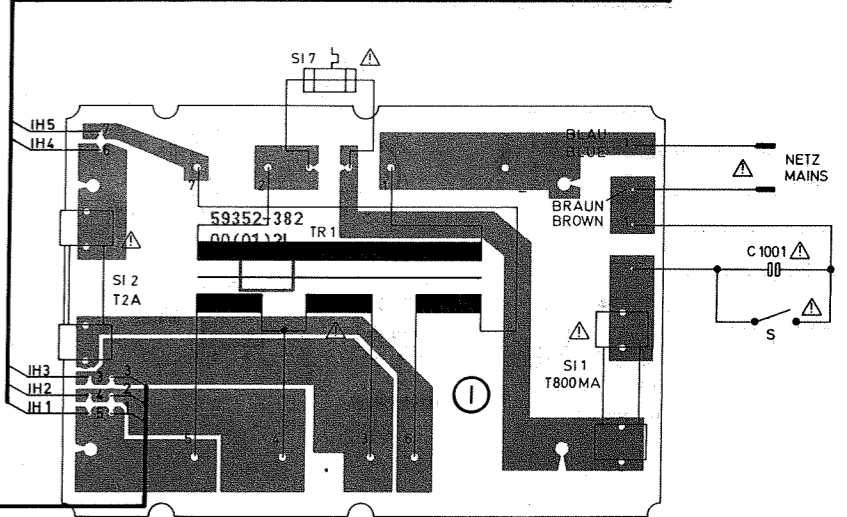
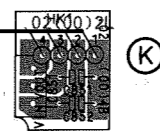
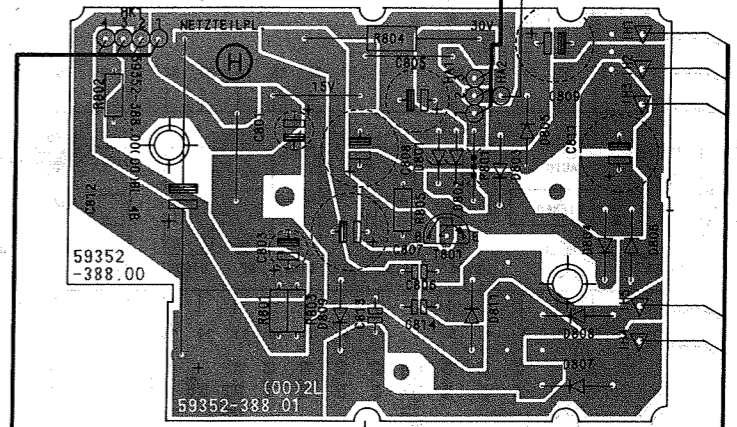
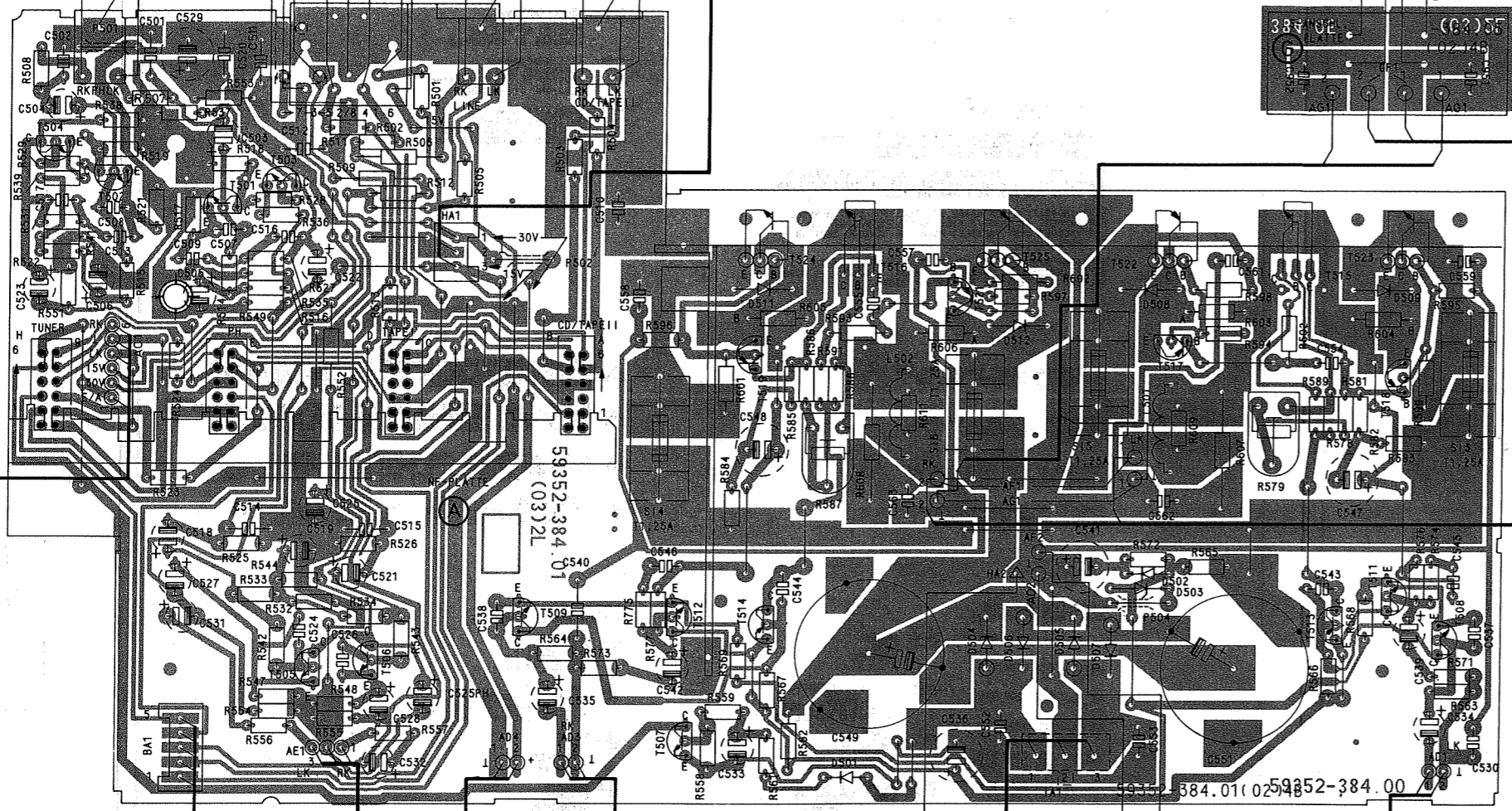
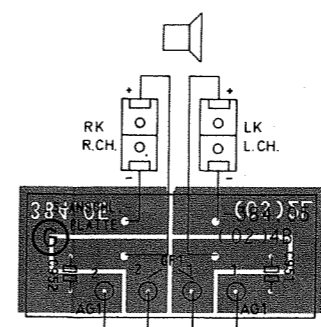
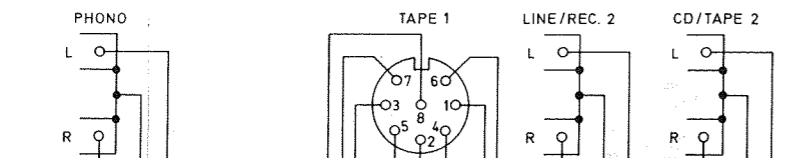
MODULO OSCILLATORE, LATO SALDATURE

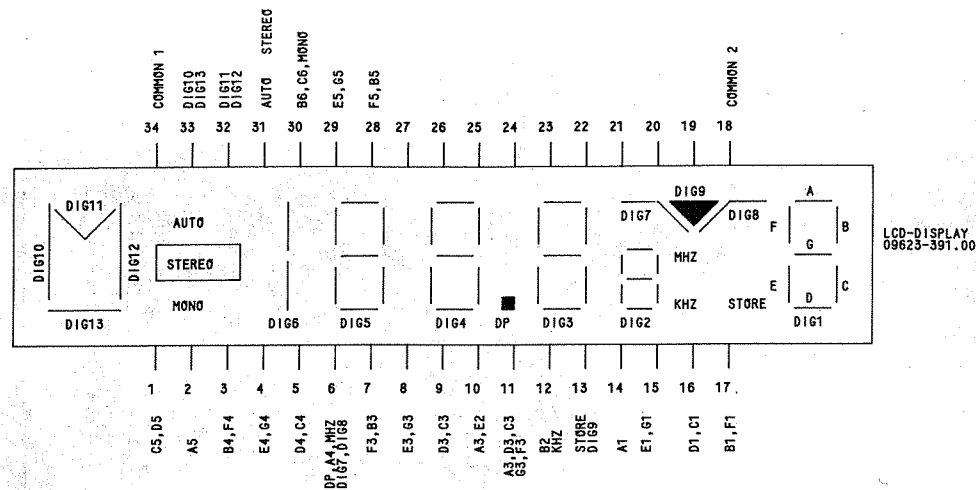


Lötseite  
 SOLDER SIDE  
 COTE DES SOUDURES  
 LATO SALDATURE

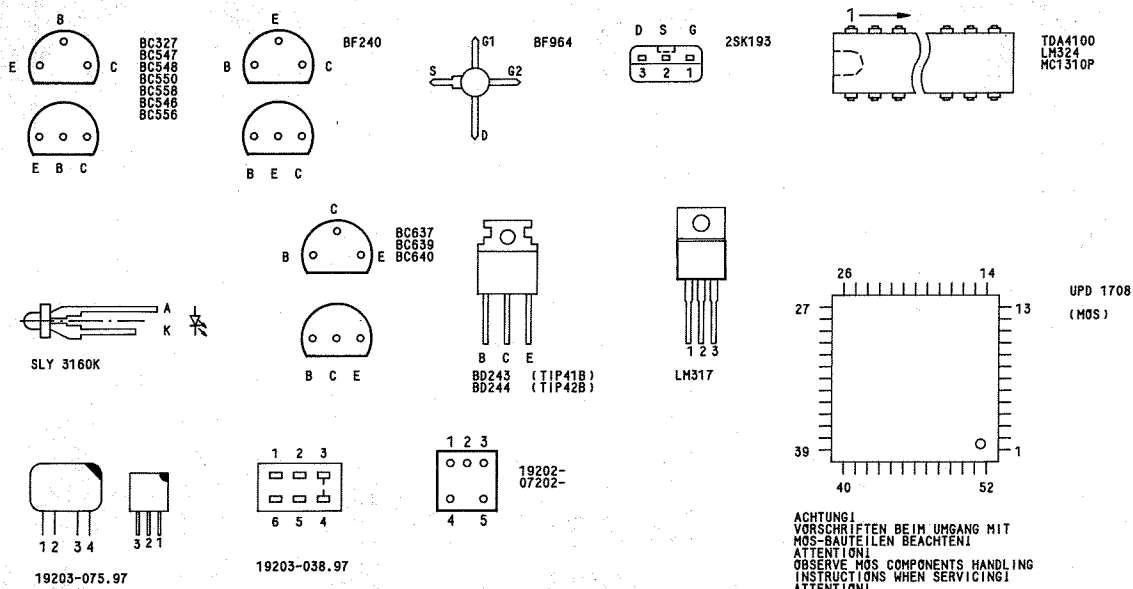


2 x 1,5V

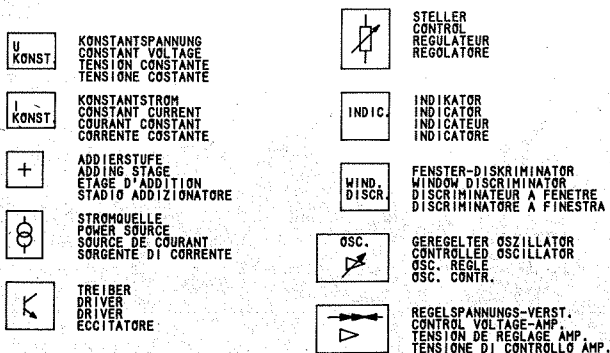




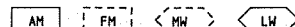
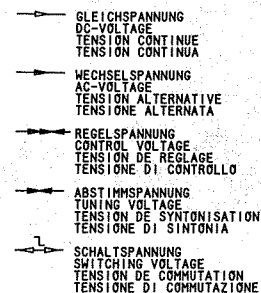
COMMON 1 (PIN 34): DIG10, DIG11, A5, F5, E5, D5, B6, C6, AUTO, A4, F4, E4, D4, A3, F3, E3, D3, A2, B2, C2, D2, F2, E1, D1, STORE  
 COMMON 2 (PIN 18): DIG12, DIG13, MONO, STEREO, C5, G5, B5, DP, C4, G4, B4, C3, G3, B3, E2, G2, KHZ, MHZ, D167, D168, D169, C1, G1, B1, A1



ACHTUNG!  
 VORSCHRIFTEN BEIM UMGANG MIT  
 MOS-BAUTEILEN BEACHTEN!  
 ATTENTION!  
 OBSERVE MOS COMPONENTS HANDLING  
 INSTRUCTIONS WHEN SERVICING!  
 ATTENTION!  
 LORS DE LA MANIPULATION DES  
 CIRCUITS MOS, RESPECTER LES  
 PRESCRIPTIONS MOS!  
 ATTENZIONE!  
 OSSERVARE LE RELATIVE PRESCRIZIONI  
 DURANTE I LAVORI CON COMPONENTI MOS!



ÄNDERUNGEN VORBEHALTEN  
 SUBJECT TO ALTERATION  
 MODIFICAZIONI RISERVATE  
 CON RISERVA DI MODIFICA



SPANNUNGEN MIT VOLTMETER (R1=10MΩ), FALLS NICHT  
 ANDERS ANGEGEBEN, GEGEN MASSE GEMESSEN.  
 MESSWERTE GELTEN BEI 220V~ NETZSPANNUNG.

IF NOT OTHERWISE INDICATED ALL VOLTAGES ARE MEASURED  
 AGAINST CHASSIS WITH A VOLTMETER (R1=10MΩ). THE VALUES  
 ARE VALID FOR 220V AC MAINS VOLTAGES.

SAUF INDICATION CONTRAIRE LES TENSIONS SONT MESUREES  
 PAR RAPPORT AU CHASSIS AVEC UN VOLTMETRE (R1=10MΩ).  
 LES VALEURS SONT VALABLES POUR UNE TENSION SECTEUR  
 DE 220V~ CA.

TENSIONI MISURATE CON VOLTMETRO (R1=10MΩ), SALVE  
 ALTRE INDICAZIONI, RIFERITE A MASSA. I VALORI DI MISURA  
 VALGONO CON TENSIONE DI RETE DI 220V~.

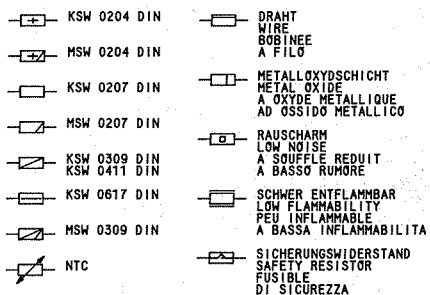
NF-SPANNUNGEN FUER 15W/8Ω ±10,95V  
 BEI 1KHZ, LAUTSTAERKE VOLL AUF

AF VOLTAGES AT 15W/8Ω ±10,95V  
 AND 1KHZ, MAX. VOLUME.

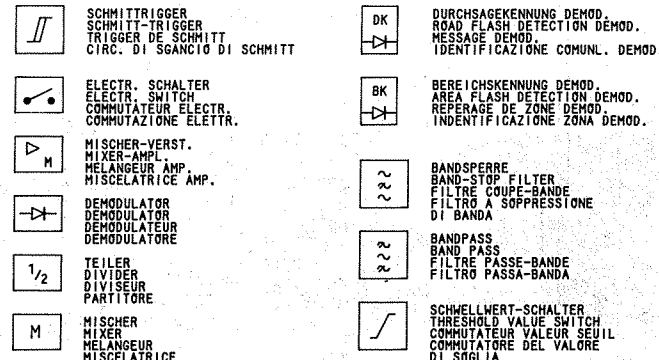
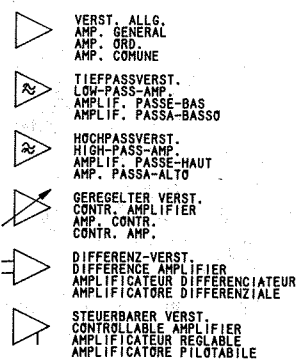
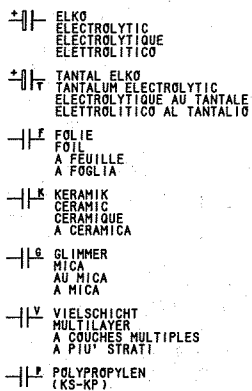
TENSIONS BF POUR 15W/8Ω ±10,95V  
 A 1KHZ, PUISSANCE MAXIMUM.

TENSIONI BF PER 15W/8Ω ±10,95  
 SU 1KHZ VOLUME AL MASSIMO.

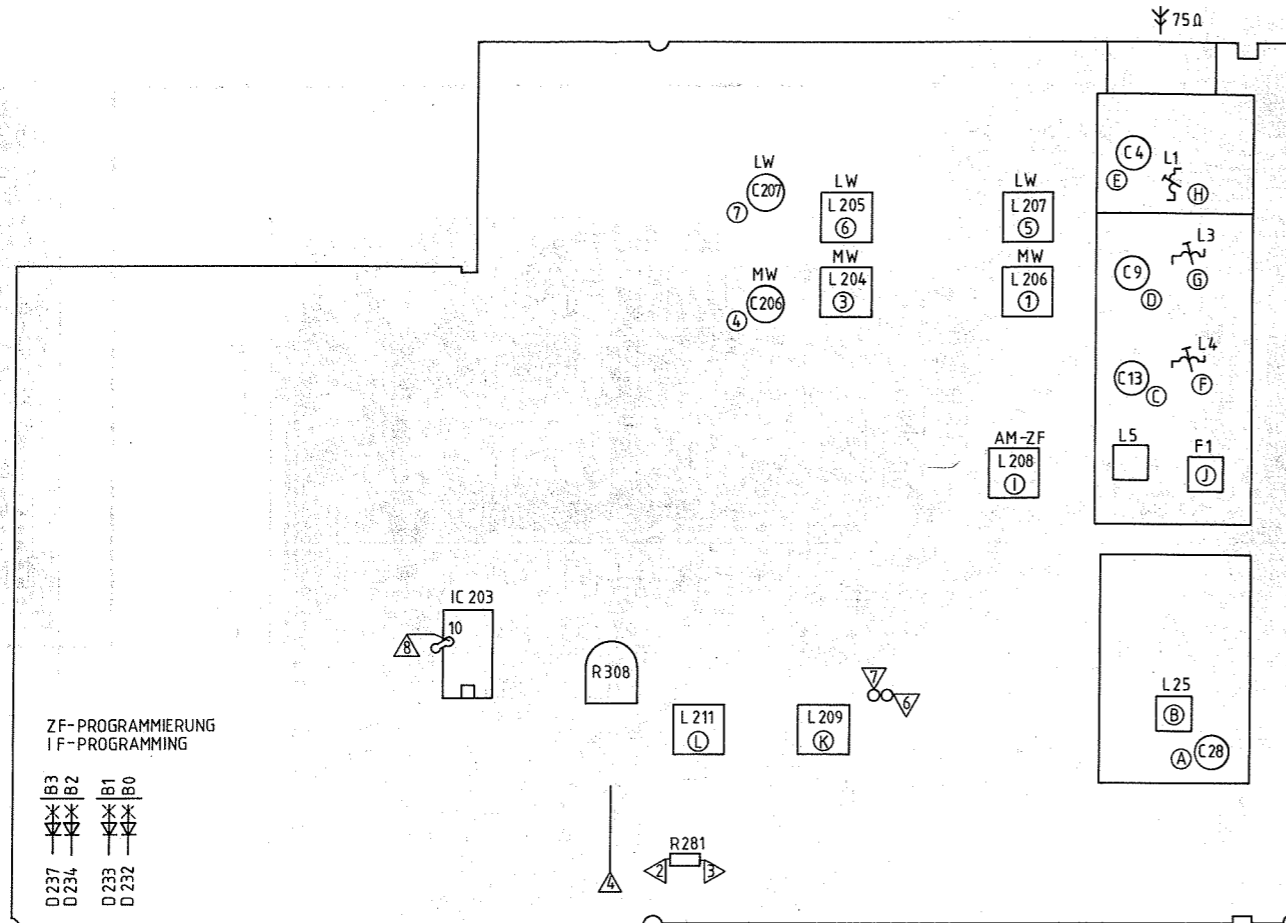
WIDERSTAND/RESISTOR  
 RESISTANCE/RESISTENZA



KONDENSATOR/CAPACITOR  
 CONDENSATEUR/CONDENSANZA



**Abgleich-Lageplan**  
**ALIGNMENT SCHEME**  
**PLAN DE REGLAGE**  
**PIANO DI TARATURA**



**ZF-Programmierung (B0; B1; B2; B3)**

Nur erforderlich nach Austausch von Keramikfiltern, Quarz oder  $\mu$ P. Vor der Programmierung muß der Demodulatorabgleich nach der Abgleichta-  
 belle durchgeführt sein.

Die Tabelle für ZF-Programmierung befindet sich im Schaltbild Seite 16.

- Gerät exakt auf die Frequenz eines Ortssenders einstellen.
- Ist die Spannung am MP  $\nabla$  um ca. 250 mV größer als an MP  $\nabla$ , muß die derzeitige ZF-Programmierung um 50 kHz erhöht werden. Bei einer Spannung von ca. 125 mV, ist eine Erhöhung um 25 kHz notwendig. (60 mV = 12,5 kHz).
- Ist die Spannung am MP  $\nabla$  kleiner als an MP  $\nabla$ , so muß bei -125 mV die ZF-Programmierung um 25 kHz bzw. bei -250 mV um 50 kHz zur derzeitigen Programmierung verkleinert werden.
- Der Nulldurchgang kann  $\pm 40$  mV Toleranz aufweisen.

**If programming (B0, B1, B2, B3)**

Only necessary if the ceramic or quartz filters or the microprocessor have been replaced.

Programming can only be carried out after demodulator alignment has been completed in accordance with the alignment table.

The table for IF tuning is included in the circuit diagram, page 16.

- Tune the receiver to the exact frequency of a local transmitter.
- If the voltage measured at test point  $\nabla$  exceeds that measured at test point  $\nabla$  by some 250 mV, the current IF programming must be increased by 50 kHz. If the voltage difference is approx. 125 mV, programming must be increased by 25 kHz (60 mV = 12.5 kHz).
- If a lower voltage is measured at test point  $\nabla$  than at test point  $\nabla$ , -125 mV requires a 25 kHz reduction in programming, and a 50 kHz reduction is required if the difference is -250 mV.
- A tolerance of  $\pm 40$  mV is permissible for zeroing.

**ABGLEICHTABELLE**  
**ALIGNMENTTABLE**

Abgleich Alignment	Einspeisung Feeding	Meßpunkt Testpoint	Hinweise Notes	Bereich Band	f	Abgleich Punkt Alignment Point	Einstellung Adjustment
U <sub>var.</sub>				FM	106 MHz	(A)	16,16 v $\pm$ 200 mV
					88 MHz	(B)	2,34 v $\pm$ 50 mV
					MW	522 kHz	(1)
					1611 kHz	(2)	22,73 v $\pm$ 50 mV
				LW	153 kHz	(5)	1,2 v $\pm$ 50 mV
Vor-/Zwischenkreis Aerial bandpass cct.	$f_{mod.} = 1$ kHz 40 kHz Hub/ deviation $U_E = <$			FM	106 MHz	(E)	Max.
			88 MHz		(D)		
Vorkreis Aerial circuit	$f_{mod.} = 1$ kHz $m = 30\%$ $U_E = <$			MW	612 kHz	(3)	
					1503 kHz	(4)	
					LW	153 kHz	
					317 kHz	(7)	
ZF IF	Abgleich nach Rauschen			MW		(I)	
				FM		(J)	Max.
Demodulator	Alignment by noise			FM		(K)	0 - V
					(L)	Min.	
Stereo			Meßsender Mod. aus Testgenerator Mod.off		95 MHz	R 308	19 kHz $\pm$ 10Hz
Ruhestrom Quiescent Current						R 579	4 mV - 10%
						R 587	+ 30%

**ZEICHENERKLÄRUNG**  
**LEGENDE**

	Stereo-Generator Stereo generator		Bandpaß Bandpass		Gleichspg. Meßger. m. Mittelanzeige DC voltage meter with centre indicator
	NF-Generator AF generator		Antenne Aerial		NF-Voltmeter AF voltage meter
	Frequenzzähler Frequency counter		Regler zu control closed		Gleichspg.-Voltmeter DC voltage meter
	Meßsender Testgenerator		Oszilloskop Oscilloscope		Digitalvoltmeter Digital voltage meter
$\updownarrow$ Einstellung wiederholen. To repeat the adjustment.					

**NF-Prüfung**

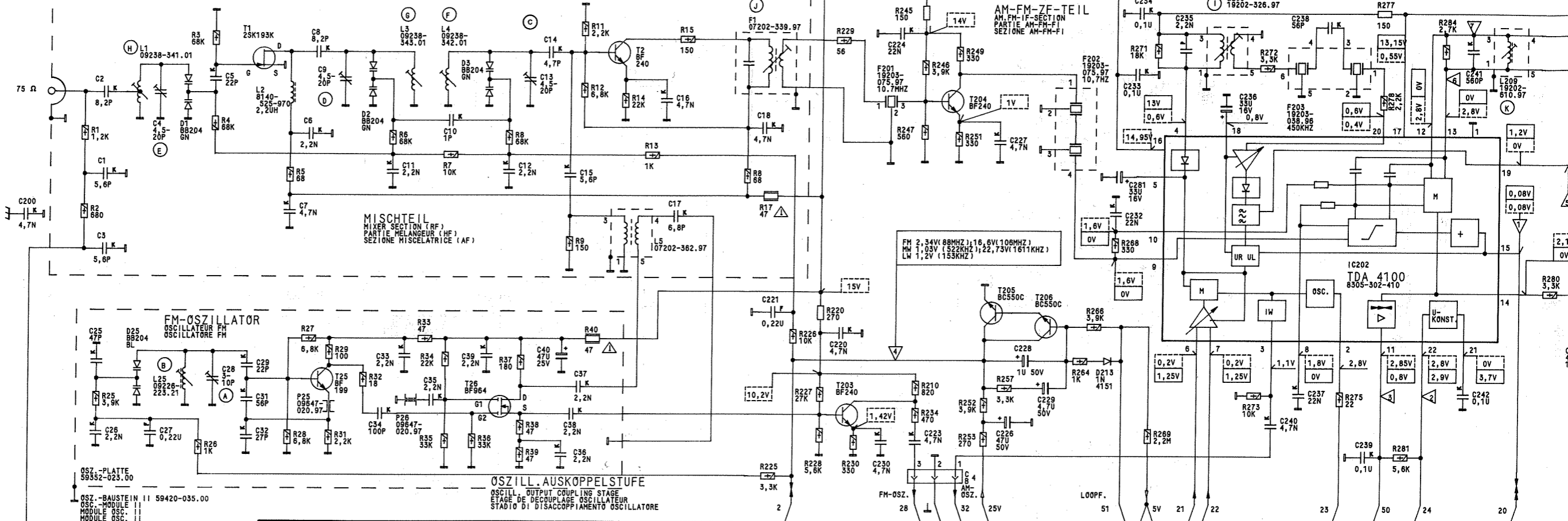
**Endstufensymmetrie**

Nach erfolgter RuhestromEinstellung darf die Gleichspannung an den unbelasteten LS-Ausgängen  $\pm 150$  mV nicht überschreiten.

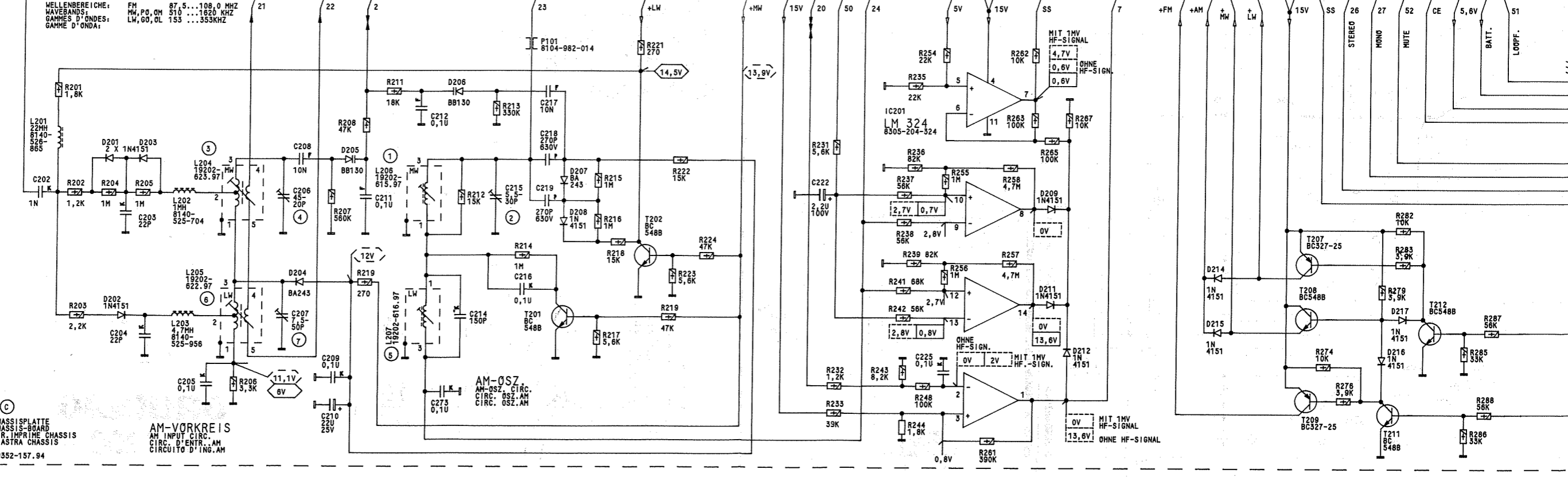
**AF Test**

**Output Stage Balance**

After the quiescent current has been adjusted the DC voltage on the unloaded loudspeaker outputs should not exceed  $\pm 150$  mV.



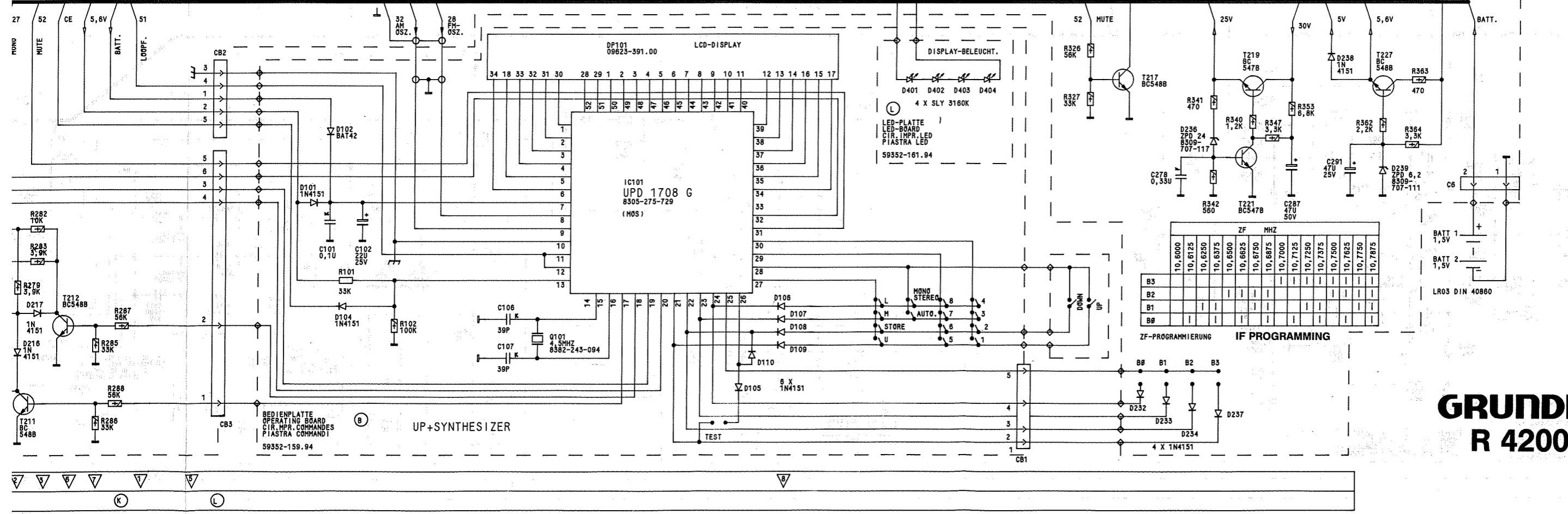
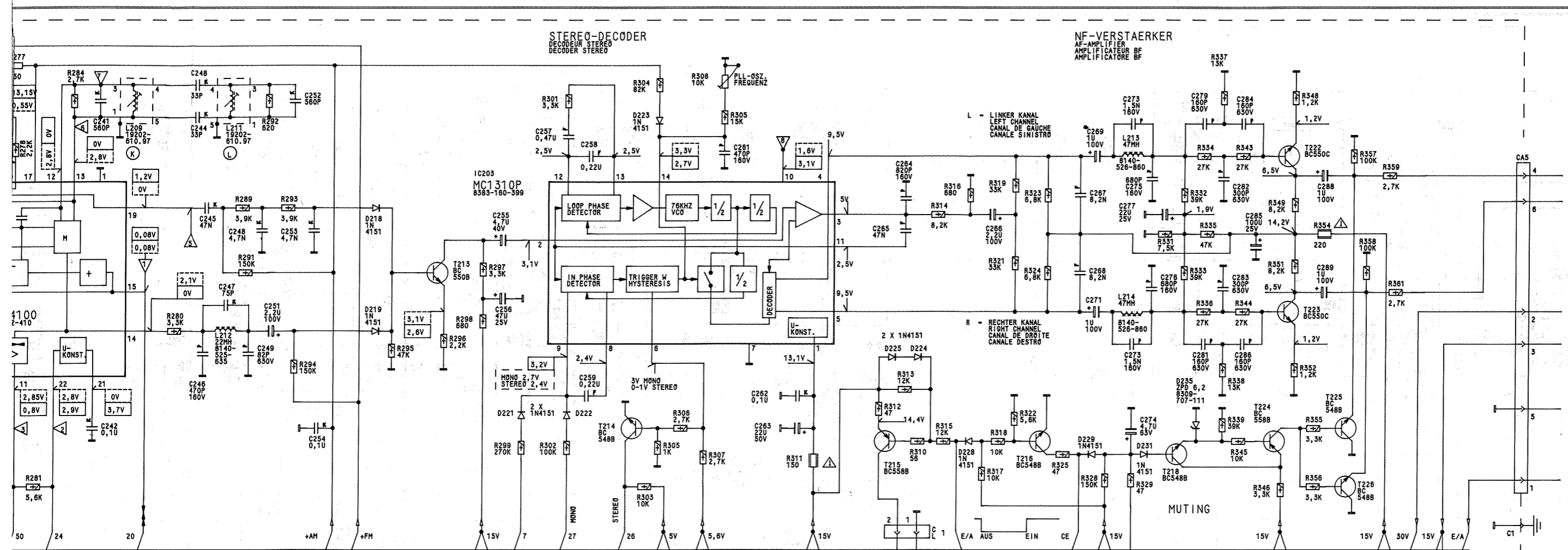
WELLENLÄNGEN: FM 87,5...108,0 MHz  
WAVELENGTHS: FM 87,5...108,0 MHz  
GAMMES D'ONDES: LW, 60, 0L 153...353KHz  
GAMME D'ONDA:



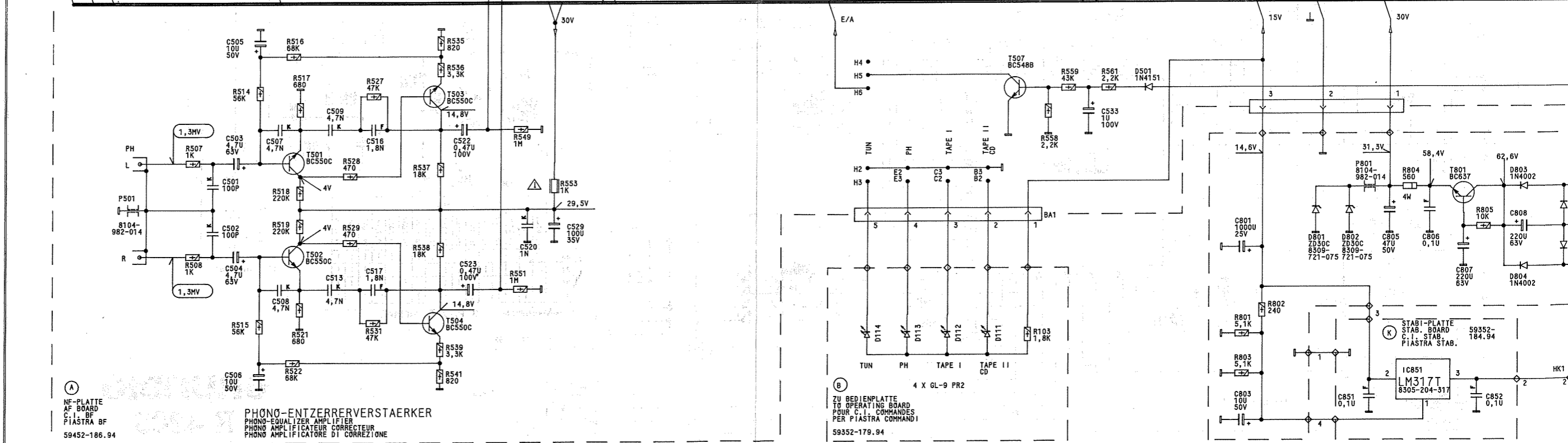
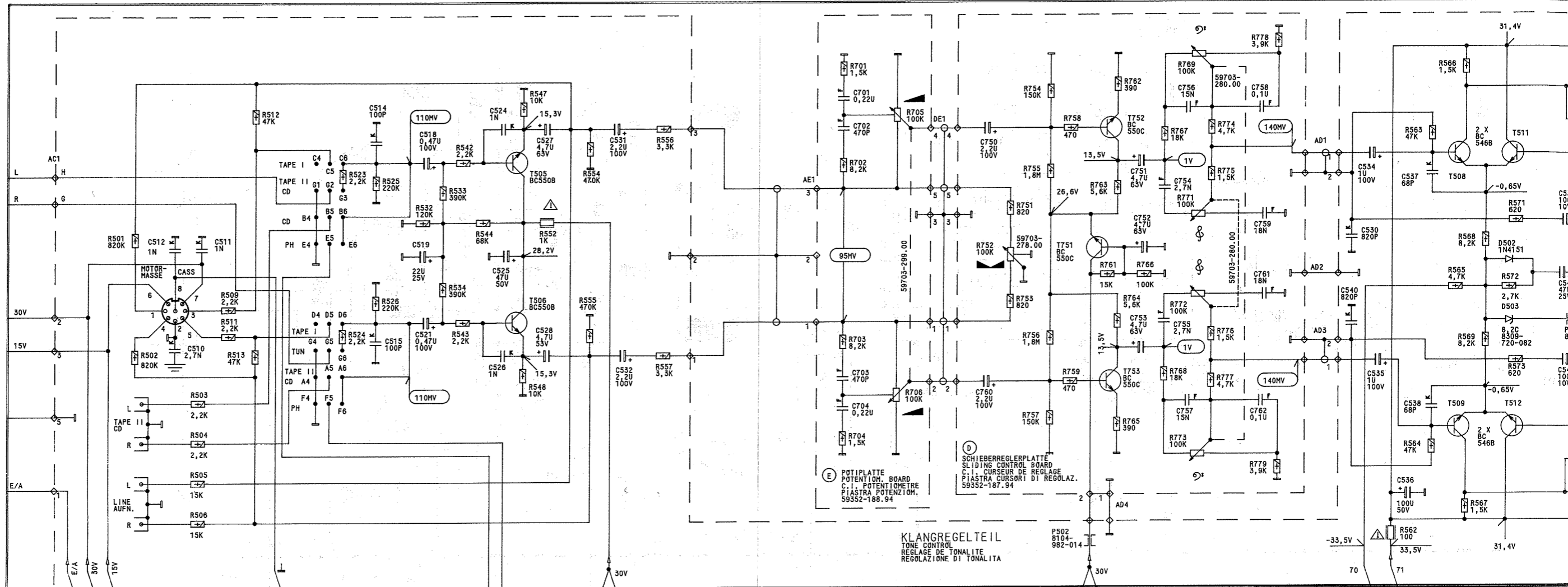
MESSPUNKTE  
MEASURING POINTS

ABGLEICHPUNKTE  
ALIGNMENT POINTS

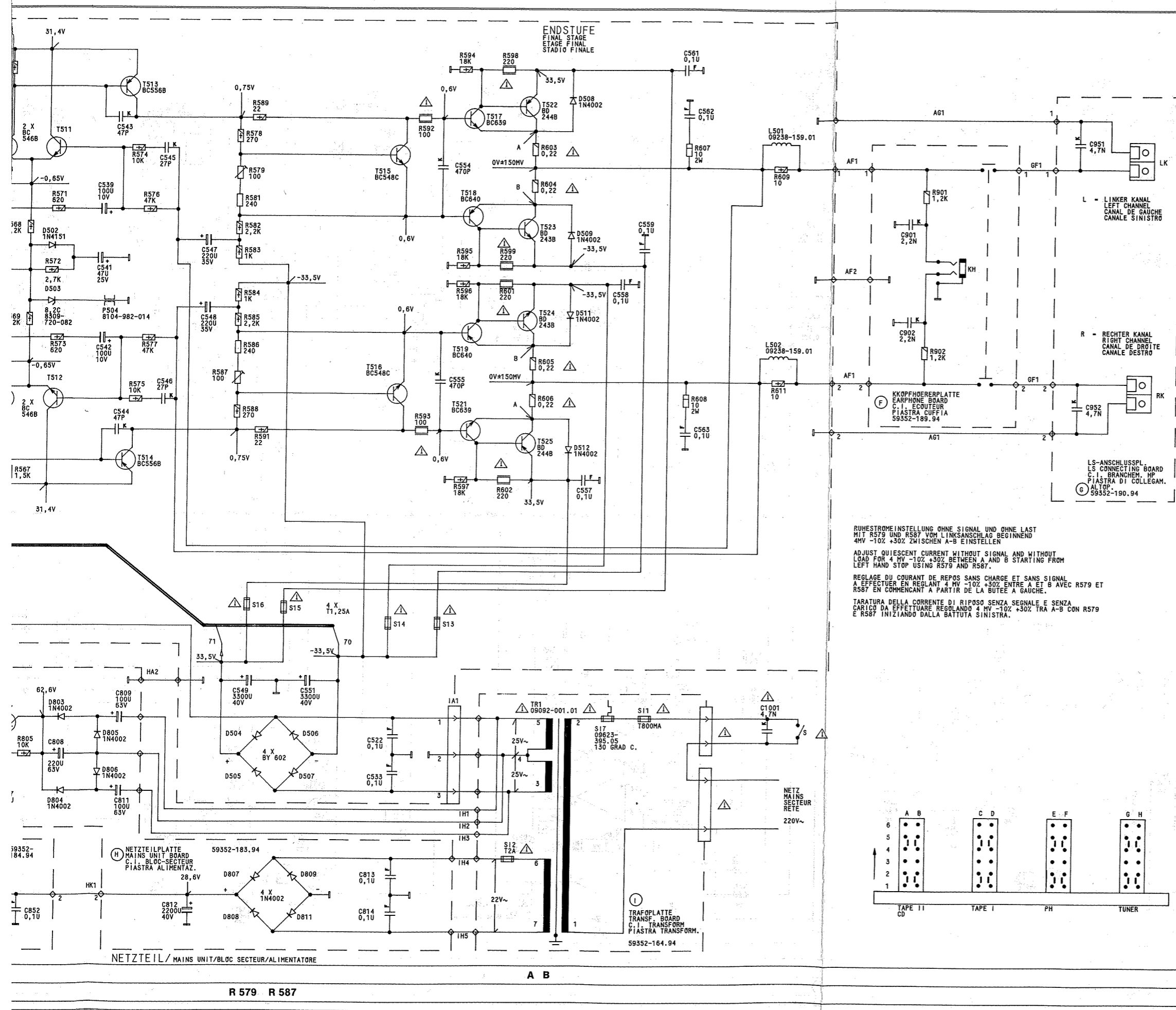
(H) (E) (B) (3) (A) (6) (4) (7) (D) (1) (5) (6) (F) (2) (C) (J) (I) (K)







MESSPUNKTE  
 MEASURING POINTS  
 ABGLEICHPUNKTE  
 ALIGNMENT POINTS

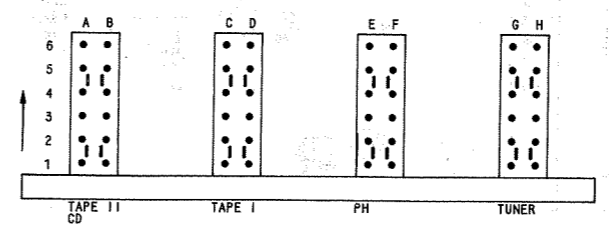


RUHESTROMEINSTELLUNG OHNE SIGNAL UND OHNE LAST  
MIT R579 UND R587 VOM LINKSANSCHLAG BEGINNEND  
4MV -10% +30% ZWISCHEN A-B EINSTELLEN

ADJUST QUIESCENT CURRENT WITHOUT SIGNAL AND WITHOUT  
LOAD FOR 4 MV -10% +30% BETWEEN A AND B STARTING FROM  
LEFT HAND STOP USING R579 AND R587.

REGLAGE DU COURANT DE REPOS SANS CHARGE ET SANS SIGNAL  
A EFFECTUER EN REGLANT 4 MV -10% +30% ENTRE A ET B AVEC R579 ET  
R587 EN COMMENCANT A PARTIR DE LA BUTEE A GAUCHE.

TARATURA DELLA CORRENTE DI RIPOSO SENZA SEGNALE E SENZA  
CARICO DA EFFETTUARE REGOLANDO 4 MV -10% +30% TRA A-B CON R579  
E R587 INIZIANDO DALLA BATTUTA SINISTRA.



# GRUNDIG R 4200

R 579 R 587