

Symbole und ihre Bedeutung

Symbols and their meaning

Simboli e loro significati

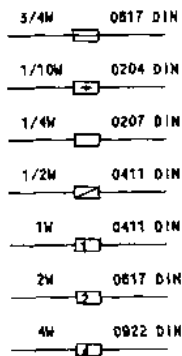
	PROGR.		SCHALTSP. VIDEO QUELLE SWITCHING VOLT. VIDEO SOURCE TENS. DI COMMUT. SORG. VIDEO TENS. DE COMMUT. SOURCE VIDEO TENS. COMMUT. VIDEO		SPITZ. STRAHLSTR. BEGR. PEAK BEAM CURRENT LIMITING CORR. CATODICA DI PICCO LIM. DE FAISCEAU CRETE CORRIENTE PICO DE HAZ
	PROGR. TASTE PROGR. BUTTON TASTO PROGR. TOUCHE PROGR. PULS. PROGR.		SCHALTSP. DATENBETR. SWITCHING VOLT. DATA MODE TENS. DI COMMUT. DATI TENS. DE COMMUT. FONCT. DONNEES TENS. COMMUT. DATOS		ROT-SIGNAL RED SIGNAL SEGNALE ROSSO SIGNAL ROUGE SENAL ROJA
	SPEICHERTASTE MEMORY BUTTON TASTO D MEMORIA TOUCHE MEMOIRE PULS. MEMORIA		SCHALTSP. 4,5 MHZ SWITCHING VOLT. 4,5 MHZ TENS. DI COMMUT. 4,5 MHZ TENS. DE COMMUT. 4,5 MHZ TENS. COMMUT. 4,5MHZ		GRUEN-SIGNAL GREEN SIGNAL SEGNALE VERDE SIGNAL VERT SENAL VERDE
	NORMTASTE TV STANDARD SELECT. BUTTON COMMUT. DI NORMA TOUCHE DE NORME PULS. DE NORMA		REGELSP. VERZOEGERT DELAYED CONTR. VOLTAGE TENS. DI CONTR. RITARD. TENS. DE REGUL. RETARDEE TENS. REGUL. RETARDADA		BLAU-SIGNAL BLUE SIGNAL SEGNALE BLEU SIGNAL BLEU SENAL AZUL
	FEINABST. + FINE TUNING + SINT. FINE + REGLAGE FIN + SINT. FINA +		ABSTIMMSP. TUNER TUNING VOLT. TUNER TENS. DI SINTONIA TUNER TENS. D'ACCORD TUNER TENS. SINTONIA AL TUNER		Y-SIGNAL SEGNALE Y SIGNAL Y SENAL Y
	FEINABST. - FINE TUNING - SINT. FINE - REGLAGE FIN - SINT. FINA -		REGELSP. AFC AFC CONTROL VOLT. TENS. DI CONTR. AFC TENS. DE REGUL. AFC TENS. REGUL. CAF		F-SIGNAL CHROMA SIGNAL SEGNALE F SIGNAL CHROMA SENAL CROMA
	SUCHLAUF BD I SELF-SEEK BAND I SINT. AUTOM. BANDA I RECHERCHE AUTOM. BANDE I SINT. AUTOM. BANDA-I		STUMMSCHALTUNG MUTING SILENZIAMENTO SILENCIEUX MUTING		SCHWARZWERT BLACK LEVEL LIVELLO DEL NERO NIVEAU DU NOIR NIVEL DE NEGRO
	SUCHLAUF BANDWAHL III SELF-SEEK BAND III SINT. AUTOM. BANDA III RECHERCHE AUTOM. BANDE III SINT. AUTOM. BANDA-III		TASTIMPULS GATING PULSE IMPULSO A CADENZA IMPULS. DE DECLENCHEMENT IMP. PUERTA		AUDIO-SIGNAL SEGNALE AUDIO SIGNAL AUDIO SENAL AUDIO
	SUCHLAUF UHF SELF-SEEK UHF SINT. AUTOM. UHF RECHERCHE AUTOM. UHF SINT. AUTOM. UHF		VERT. TASTIMPULS VERT. GATING PULSE IMP. A CADENZA VERT. IMP. TRAME IMP. CUADRO		AUDIO SIGNAL LINKS AUDIO SIGNAL LEFT SEGNALE AUDIO SINISTRA SIGNAL AUDIO GAUCHE SENAL AUDIO IZQUIERDA
	LAUTSTAERKE VOLUME VOLUME SONORE VOLUMEN		VERT. PARABEL VERT. PARABOLA PARABOLA VERT. SIGNAL PARABOLIQUE SENAL PARABOL. VERT.		AUDIO SIGNAL RECHTS AUDIO SIGNAL RIGHT SEGNALE AUDIO DESTRA SIGNAL AUDIO DROIT SENAL AUDIO DERECHA
	FEINABST. FINE TUNING SINT. FINE REGLAGE FIN SINT. FINA		VERT. SAEGETZAHN VERT. SAW TOOTH DENTE DI SEGA VERT. SIGNAL DENT DE SCIE DIENTE DE SIERRA VERT.		VIDEO SIGNAL EURO-AV SEGNALE VIDEO EURO-AV SIGNAL VIDEO NORME FR SENAL VIDEO EURO-AV
	KANALWAHL CHANNEL SEL. SELEZ. CANALE SELECT. DE CANAUX SELECCION CANAL		HOR. ANSTEUERUNG HORIZ. DRIVE PILOTAGGIO ORIZZ. SYNCHR. LIGNES EXCITACION HORIZ.		AUDIO SIGNAL EURO-AV RECHTS AUDIO SIGNAL EURO-AV RIGHT SEGNALE AUDIO EURO-AV DESTRA SIGNAL AUDIO NORME FR DROIT SENAL AUDIO DERECHA EURO-AV
	BALANCE BILANCIAM. BALANCE BALANCE		REF. IMPULS REFERENCE PULSE IMP. DI RIFER. IMP. DE REFER. IMP. REFERENCIA HORIZ.		AUDIO SIGNAL EURO-AV LINKS AUDIO SIGNAL EURO-AV LEFT SEGNALE VIDEO EURO-AV SINISTRA SIGNAL AUDIO NORME FR GAUCHE SENAL AUDIO IZQUIERDA EURO-AV
	SUCHLAUF SELF-SEEK SINT. AUTOM. RECHERCHE AUTOM. SINTONIA AUTOMATICA		SCHUTZSCHALTUNG CIRCUIT PROTECTION CIRCUITO DI PROTEZIONE CIRCUIT DE SECURITE CIRCUITO DE PROTECCION		IR-SIGNAL SEGNALE IR SIGNAL IR SENAL IR
	SCHALTSP. BANDWAHL BAND SEL. SWITCHING VOLTAGE TENS. DI COMMUT. SELEZ. BANDA TENS. DE COMMUT. SELECT. BANGE TENS. COMMUT. SELEC. BANDA		FARBTON TINT TINTA TEINTE TINTE		SPG. GITTER 1 VOLTAGE GRID 1 TENS. GRIGLIA 1 TENS. GRILLE G1 TENS. REJILLAS G-1
	SCHALTSP. VHF SWITCHING VOLT. VHF TENS. DI COMMUT. VHF TENS. DE COMMUT. VHF TENS. COMMUT. VHF		REF. LAUTSTAERKE VOLUME REF. VOLT. TENS. DI RIF. VOLUME TENS. DE REF. VOL. SONORE TENS. REF. VOLUMEN		FOKUSSP. FOCUSSING VOLTAGE TENS. DI FOCALIZZ. TENS. DE FOCALIS. TENS. FOCALIZACION
	SCHALTSP. UHF SWITCHING VOLT. UHF TENS. DI COMMUT. UHF TENS. DE COMMUT. UHF TENS. COMMUT. UHF		HELLIGKEIT BRIGHTNESS LUMINOSITA' LUMINOSITE BRILLO		HOCHSPANNUNG HHT VOLTAGE ALTA TENS. HAUTE TENS. MAT
	SCHALTSP. AFC SWITCHING VOLT. AFC TENS. DI COMMUT. AFC TENS. DE COMMUT. AFC TENS. COMMUT. CAF		KONTRAST CONTRAST CONTRASTO CONTRASTE CONTRASTE		SCHIRMGITTERSP. SCREEN-GRID VOLT. TENS. GRIGLIA SCHERMO TENS. GRILLE-ECRAN TENS. ACELERADORES
	SCHALTSP. AV AV SWITCHING VOLT. TENS. DI COMMUT. AV TENS. DE COMMUT. AV TENS. COMMUT. AV		FARBKONTRAST CONTRAST COLOUR CONTRASTO COLORE CONTRASTE COULEUR SATUR. COLOR		TEXT ENABLE
	SCHALTSP. NORM SWITCHING VOLT. STANDARD TENS. DI COMMUT. NORMA TENS. DE COMMUT. STANDARD TENS. COMMUT. NORMA		FBAS-SIGNAL CCVS SIGNAL SEGNALE SVCC SIGNAL VIDEO COMPOSITE SENAL VIDEO COMPUESTA		I ² C-CLOCK I ² C-BUS
	SCHALTSP. KOINZ. SWITCHING VOLT. COINC. TENS. DI COMMUT. COINC. TENS. DE COMMUT. COINC. TENS. COMMUT. COINCIDENCIA		SUPERSANDCASTLE		VCR-CLOCK
	SCHALTSP. EURO-AV SWITCHING VOLT. EURO-AV TENS. DI COMMUT. EURO-AV TENS. DE COMMUT. NORME FR TENS. COMMUT. EURO-AV		STRAHLSTR. BEGR. BEAM CURRENT LIM. CORRENTE CATODICA MEDIA LIM. COUR. DE FAISCEAU CORRIENTE MEDIA DE HAZ		I-BUS-CLOCK

Wichtige Schaltzeichen
Important circuit symbols
Segni circuitali importanti

SDA	DATEN DATA DONNEES DATA
ZF	ZF-SIGNAL IF SIGNAL SEGNALE FI SIGNAL FI SEÑAL DE FI
PP	PAL PRIORITÄT PAL PRIORITY PRIORITA' PAL PRIORITE PAL PRIORIDAD PAL
F-DIR	F-SIGNAL DIREKT F SIGNAL DIRECT SEGNALE F DIRETTO SIGNAL CHROMA DIRECT SEÑAL CROMA DIRECTA
FV	FV-SIGNAL FV SIGNAL SEGNALE FV SIGNAL FV SEÑAL FV
FU	FU-SIGNAL FU SIGNAL SEGNALE FU SIGNAL FU SEÑAL FU
F-VERZ	F-SIGNAL VERZÖGERT F SIGNAL DELAYED SEGNALE F RITARD. SIGNAL CHROMA RETARDE SEÑAL CROMA RETARADA
DL	VERZÖGERUNGSLEITUNG DELAY LINE LINEA DI RITARDO LIGNE A RETARD LINEA DE RETARDO
U_{SDUTS}	SCHALTSP. /SCHUTZFUNKTION SWITCHING VOLT. /PROTECTIVE FUNC. TENS. DI COMMUT. /FUNZ. DI PROTEZ. TENS. DE COMMUT. / SECURITE TENS. COMMUT. /PROTECCION
FBAS SYNC.	FBAS/SYNC.-SIGNAL CCVS/SYNC. SIGNAL SEGNALE SINCR. /VIDEO COL. COMP. SIGNAL SYNC./VIDEO COMPOSITE SEÑAL SINCR./VIDEO COMPUESTA
SYNC.	SYNC.-SIGNAL SYNC. SIGNAL SEGNALE SINCR. SIGNAL SYNC. SEÑAL DE SINCRONISMO
U_{50/60 Hz}	SCHALTSP. 50/60HZ SWITCHING VOLT. 50/60HZ TENS. DI COMMUT. 50/60HZ TENS. DE COMMUT. 50/60HZ TENS. COMMUT. 50/60HZ
U_{BTX}	SCHALTSP. BTX SWITCHING VOLT. BTX (VIEWDATA) TENS. COMMUT. VIDEOTEL TENS. COMMUT. VIDEOTEXT TENS. COMMUT. VIDEOTEXTO
SYNC. VT	SYNC. VT SYNC. VT (TELETEXT) SINCR. TELEVIDEO SYNC. TELETEXTE SINCR. TELETXTO
SYNC. BTX	SYNC. BTX SYNC. BTX (VIEWDATA) SINCR. VIDEOTEL SYNC. VIDEOTEXT SINCR. VIDEOTEXTO
U_{RESET}	SCHALTSP. RESET SWITCHING VOLT. RESET TENS. COMMUT. RESET TENS. COMMUT. RESET
U_{STAND BY}	SCHALTSP. STAND BY SWITCHING VOLT. STAND BY TENS. COMMUT. STAND BY TENS. COMMUT. VEILLE TENS. COMMUT. STAND BY
U_{HUB}	SCHALTSP. HUB SWITCHING VOLT. DEVIATION TENS. COMMUT. DEVIATION TENS. COMMUT. DEVIATION TENS. COMMUT. DESVIACION
U_{DEEM}	SCHALTSP. DEEM SWITCHING VOLT. DEEMPHASIS TENS. COMMUT. DEENFASI TENS. COMMUT. DESACCENT. TENS. COMMUT. DEENFASIS
U_{FEAR}	SCHALTSP. KAMERA WIEDERG. SWITCHING VOLT. CAMERA PLAYBACK TENS. COMMUT. RIPRODUZ. TELECAM. TENS. COMMUT. REPROD. CAMERA TENS. COMMUT. REPROD. CAMARA
U_{LED}	SCHALTSP. LED LED SWITCHING VOLT. LED TENS. DI COMMUT. LED TENS. DE COMMUT. LED TENS. COMMUT. LED

	ZEILENBREITE LINE WIDTH LARGHEZZA DI RIGA AMPLITUDE HORIZONTALE AMPLITUD HORIZONTAL
	OST / WEST AMPLITUDE EAST / WEST AMPLITUDE AMPIEZZA EST / OVEST AMPLITUDE EST / OUEST AMPLITUD E/O
	HOR. LINEARITÄT HORIZ. LINEARITY LINEAR. ORIZZ. LINEAR. HORIZONT. LINEAL. HORIZONTAL
	BILDAGE HOR. HORIZ. PICTURE POSITION POSIZIONE ORIZZ. D'IMMAGINE CADRAGE HORIZONT. CENTRADO HORIZONTAL
	FOKUSREGLER FOCUS CONTROL REGOLAT. DI FOCALIZZ. REGLAGE DE FOCALISATION CONTROL DE FOCO
	BILDAGE VERT. VERT. PICTURE POSITION POSIZ. VERT. D'IMMAGINE CADRAGE VERTICAL CENTRADO VERTICAL
	BILDAMPLITUDE FIELD AMPLITUDE AMPIEZZA D'IMMAGINE AMPLITUDE VERTICALE AMPLITUD VERTICAL
	TRAPEZ TRAPEZIUM TRAPEZIO TRAPEZE TRAPECID
	HOR. FREQUENZ HOR. FREQUENCY FREQ. ORIZZ. FREQ. HORIZ. FRECUENCIA HORIZONTAL
	VERT. FREQUENZ VERT. FREQUENCY FREQ. VERT. FRECUENCIA VERTICAL
	VERT. LINEARITÄT VERT. LINEARITY LINEAR. VERT. LINEAR. VERT. LINEALIDAD VERTICAL
	OST/WEST SYMMETRIE EAST/WEST SYMMETRY SIMMETRIA EST/OVEST SYMMETRIE EST/OUEST SIMETRIA E/O

	IC'S VOM UNTEN GESEHEN IC'S SEEN FROM BOTTOM IC'S VISTI DI SOTTO IC'S VUS DU DESSOUS	3/4W 1/10W 1/4W 1/2W 1W 2W 4W
	TOA 4801	MINIEST. RESISTOR RESISTEI RESISTA
	BF 189 78 L05 CP BC 548 / BC 558 BC 337/25 PH 2222 BC 338 / BC 324 BF 414 BC 308 / BC 240 BC 547	GRAPHW. WIRE RE RESISTE RESISTA SIGNERA SAFETY RESISTE RESISTA
	TOA 4935	
	DL 80292	
	TDA 2040	
	TDA 3854 TDA 3853A	



WIDERSTAND NICHT BRENNBAR
RESISTOR NOT FLAMMABLE
RESISTENZA NON INFAMMABILE
RESISTANCE ININFLAMMABLE



DRAHTWIDERSTAND
WIRE RESISTOR
RESISTENZA A FILLO
RESISTANCE BOBINEE



SICHERUNGSWIDERSTAND
SAFETY RESISTOR
RESISTENZA DI SICUREZZA
RESISTANCE DISJONCTABLE

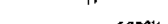
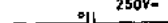


STECKERUNTERTEIL ZÄHNRICHTUNG
PLUG BOTTOM PART COUNTING DIRECTION
PARTE INFER. SPINA DIREZ. CONTEGGIO
SENS COMPTAGE PARTIE INFER. CONNECTEUR



LOETSEITE
SOLDER SIDE
LATO SALDATURE
COTE SOUDURE

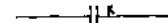
KONDENSATOR
CAPACITOR
CONDENSATORE
CONDENSATEUR



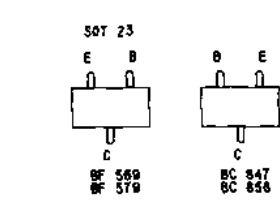
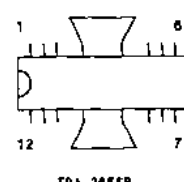
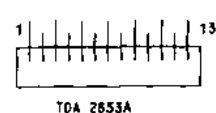
FOLIE
Foil
A FOLIA
FOLIO PLASTIQUE



KERAMIK
CERAMIC
CERAMICO
CERAMIQUE



ELKO
ELECTROLYTIC
ELETTROLITICO
ELECTROLYTIQUE



ACHTUNG: BEI EINGRIFFEN INS GERÄT SIND DIE SICHERHEITSVORSCHRIFTEN NACH VDE701(REPARATURBEZOGEN) BZW.VDE0860/IEC65 (GERÄTEBEZOGEN) ZU BEACHTEN.



IM REPARATURFALL DÜRFEN NUR ORIGINALBAUTEILE VERWENDET WERDEN!

ACHTUNG! VORSCHRIFTEN BEIM UMGANG MIT MOS - BAUTEILEN BEACHTEN!



ATTENTION: PLEASE OBSERVE THE APPLICABLE SAFETY REQUIREMENTS ACCORDING TO VDE 701 (CONCERNING REPAIRS) AND VDE 0860/IEC 65 (CONCERNING TYPE OF PRODUCT).



ONLY USE COMPONENTS WITH THE SAME SPECIFICATION FOR REPLACEMENT!

ATTENTION! OBSERVE MOS COMPONENTS HANDLING INSTRUCTIONS WHEN SERVICING!



ATTENTION: PRIERE D'OBSERVER LES PRESCRIPTIONS DE SECURITE VDE 701 (CONCERNANT LES REPARATIONS) ET VDE 0860/IEC 65 (CONCERNANT LE TYPE DE PRODUIT).



EN CAS DE REMPLACEMENT N'UTILISER QUE DES COMPOSANTS DES MEMES SPECIFICATIONS!

ATTENTION! LORS DE LA MANIPULATION DES CIRCUITS MOS, RESPECTER LES PRESCRIPTIONS MOS!



ATTENZIONE: OSSERVARE LE CORRISPONDENTI PRESCRIZIONI DI SICUREZZA VDE 701 (CONCERNENTE SERVIZIO) E VDE 0860/IEC 65 (CONCERNENTE IL TIPO DI PRODOTTO).



IN CASO DI SOSTITUZIONE IMPIEGARE SOLO COMPONENTI CON LE STESSA CARATTERISTICHE!

ATTENZIONE! OSSERVARE LE RELATIVE PRESCRIZIONI DURANTE I LAVORI CON COMPONENTI MOS!



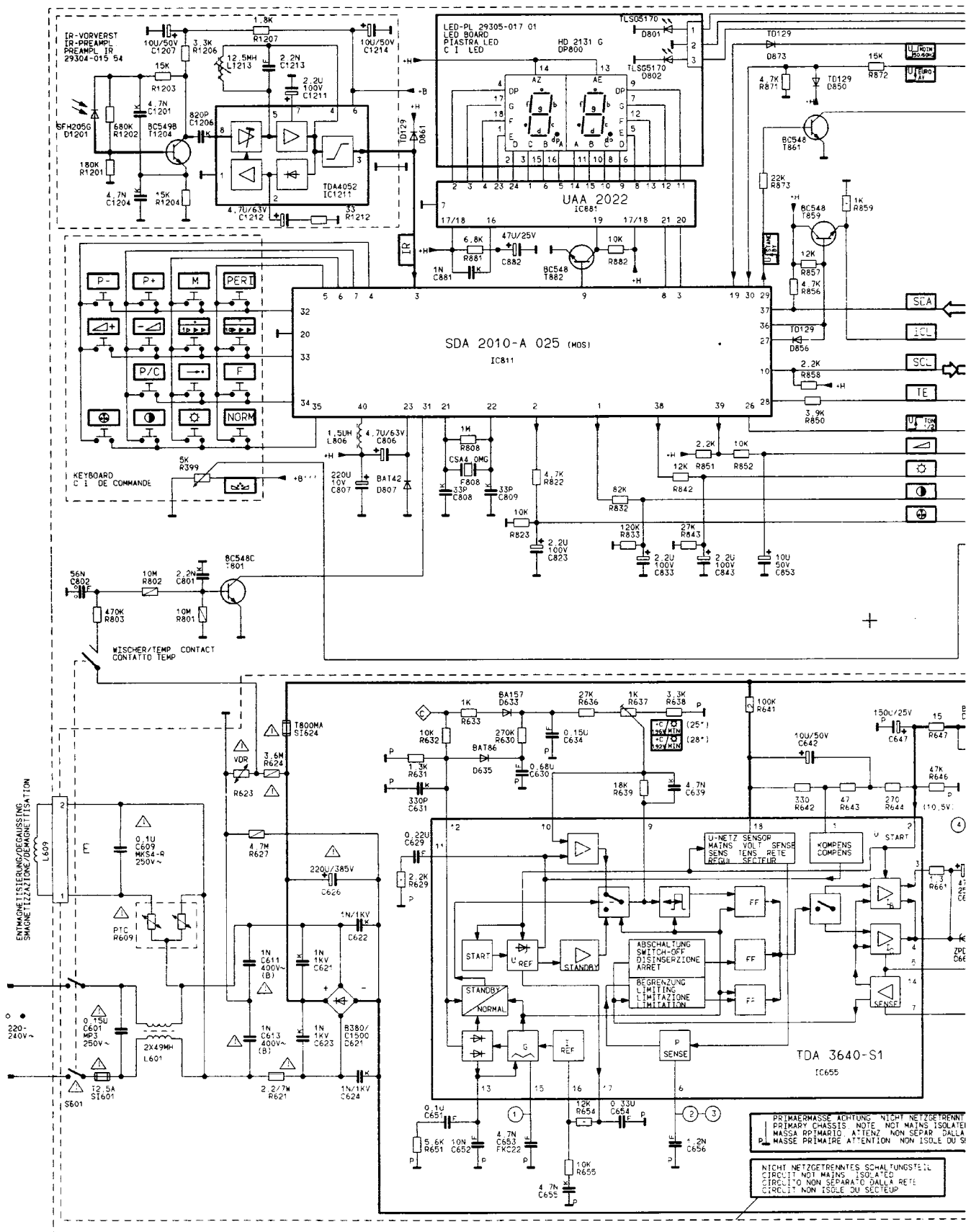
ATENCION: RECOMENDAMOS LAS NORMAS DE SEGURIDAD VDE U OTRAS NORMAS EQUIVALENTES. POR EJEMPLO: VDE 701 PARA REPARACIONES, VDE 0860/IEC 65 PARA APARATOS.

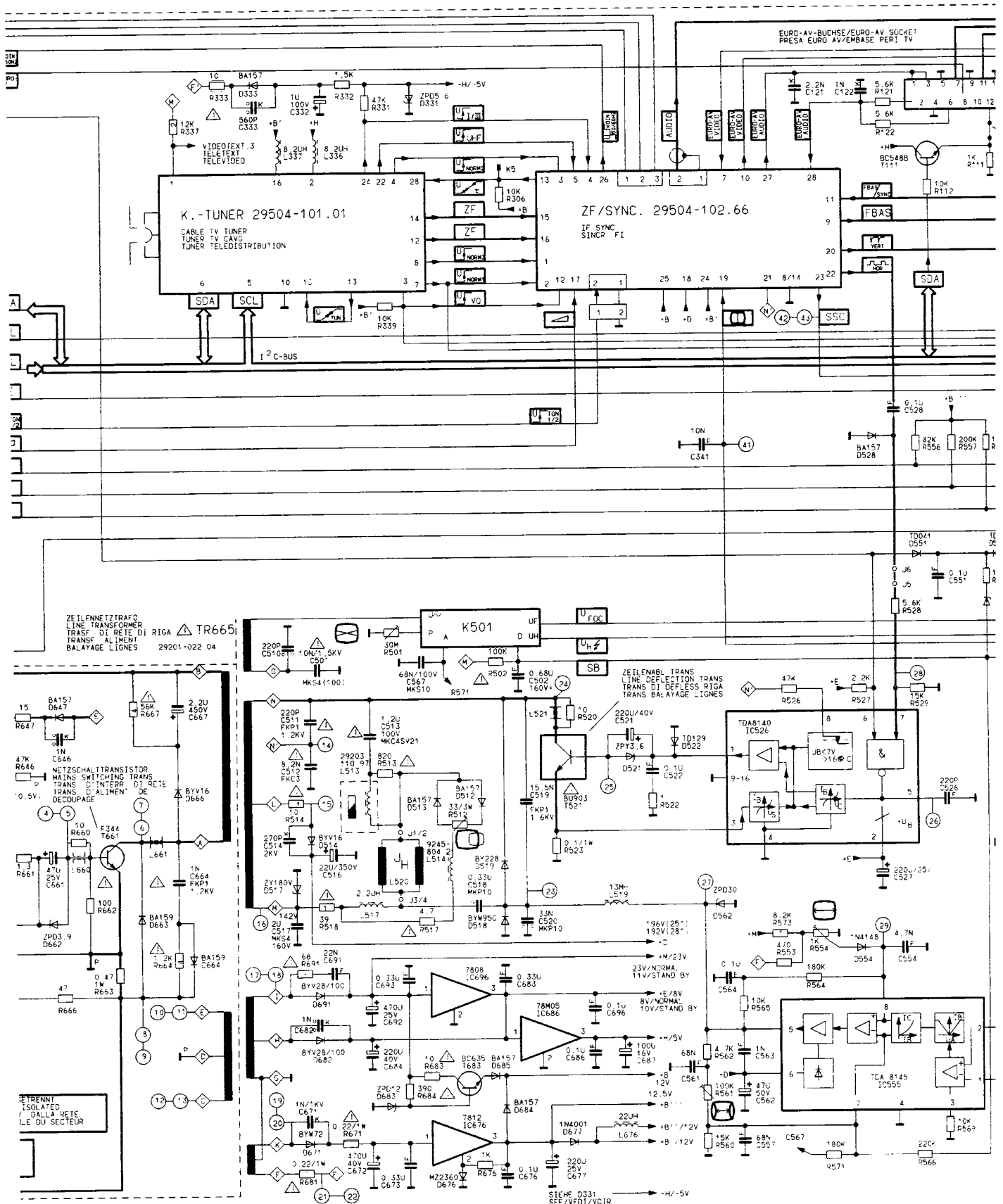


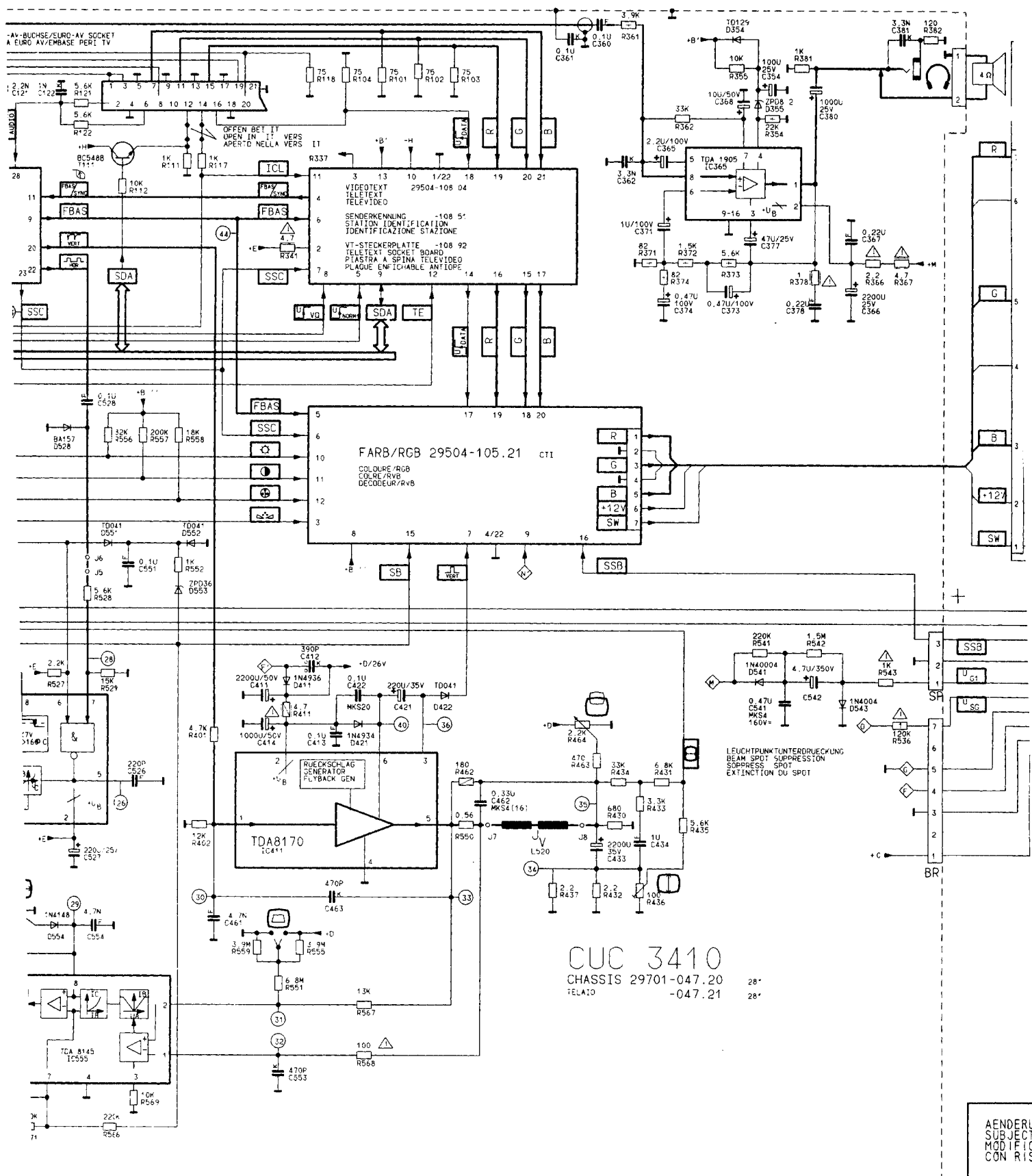
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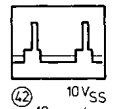
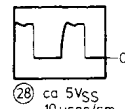
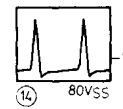
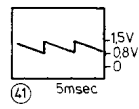
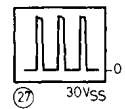
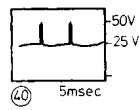
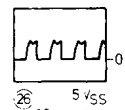
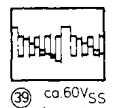
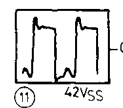
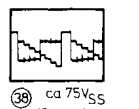
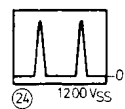
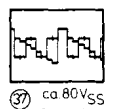
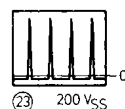
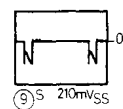
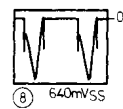
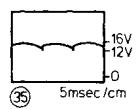
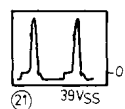
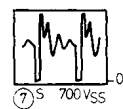
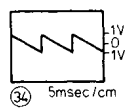
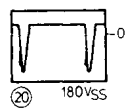
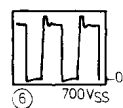
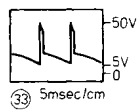
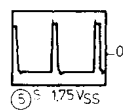
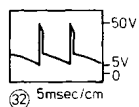
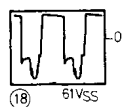
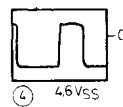
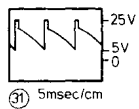
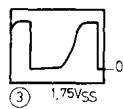
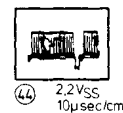
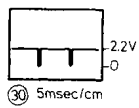
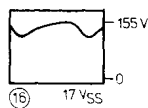
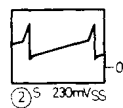
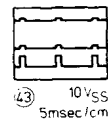
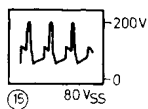
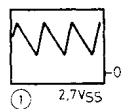
ATENCION! DURANTE LA REPARACION OBSERVAR LAS NORMAS SOBRE COMPONENTES MOS!











Service checks on the I²C bus (with SIEMENS processor)

If faults occur in the set which cannot be attributed to the power supply unit, the EHT or the deflection system, the I²C bus should be checked using Table 1 before further service work is carried out using Table 2.

Via the I²C bus the microcomputer in the control unit IC 811 supplies control signals for the tuner, videotext (teletext) T 111 (to the EURO-AV-socket).

Note:

When a module is being changed, the set should be switched off completely. Modules must not be unplugged even in the »standby« mode! Observe MOS handling precautions.

Table 1

Test	Test Figures	Test Point	Possible faults
+ H	5 V	Pin 40, IC 811	D 682, IC 686, IC 811
4 MHz clock Reset	4 MHz, 3 V _{pp} 4 V _{pp} only at moment of switch on	Pin 22, IC 811 Pin 23	F 808, IC 811 C 806, D 807, IC 811
I ² C bus	5 V _{pp}	Pin 10, 37, IC 811	The I ² C bus data are present even without input from the remote control or keyboard. If data are absent disconnect the SDA and SCL lines. If data are then present on the I ² C bus, the I ² C bus is overloaded. Possible faults: Tuner, Videotext (Teletext), T 111

Table 2

Possible faults which can occur in any part of the set

Fault	Possible Cause	Test Figure	Test Point
No frequency tuning	Tuner (memory, PLL)	+ 0.2–30 V	Pin 13, 15
	+ B' + H 	+ 12 V + 5 V ca. + 4.5 V	Tuner pin 16 Tuner pin 2 Tuner pin 1
No functions accepted	+ H, IC 811	+ 5 V	IC 811 pin 40
Incorrect LED indication	IC 811		
	F 808	4 MHz, 3 V	IC 811 pin 22
No sound	No coincidence identification (IF)	>3 V	IC 811 pin 19
	IC 365	+ M/about 23 V	IC 365 pin 2
Programme cannot be changed with remote control	IR-preamplifier	IR-signal 5 V _{pp}	IC 811 pin 3
No analog signals for Brightness Contrast Colour contrast	IC 811, IC 843	1–3 V	Colour/RGB, pin 10
	IC 811, C 833	2–4 V	Colour/RGB, pin 11
	IC 811, C 823	2–4 V	Colour/RGB, pin 12
Set switches to standby mode on operation of power button	T 801	Short-time "LOW" on switch-on (collector)	IC 811, pin 31
No CCVS	Tuner	approx. 10 V	Tuner, pin 3
	IF	approx. 10 V	IF-SYNC., pin 12
	+ B, + B'	+ 12 V	IF-SYNC., pin 25, 24
Receiver does not go to working order – audible whistle	C 653 Tolerance too large or capacitor defective	 Probe 1:10	IC 655 Pin 15

Short Functional Description

The GRUNDiG line/power supply unit has two important features:

- the line/mains transformer (ZNT) with ferrite core. This transformer is provided with windings for the power supply and line output stages;
- the supply frequency corresponds to the line frequency.

The ZNT is used for electrical isolation, horizontal deflection, and generation of the operating voltage. The ZNT windings are tightly and loosely coupled to ensure that the load capacity of the supplies is high enough and that back effects on the line transformer winding N-M are avoided.

Startup Circuit

The starting voltage for IC 655 is obtained from the bridge rectifier D 621 via R 641. If the voltage on pin 2, which is derived from the resistor network R 642, 643, and 644, reaches a level of approximately 10 V, the IC 655 starts to drive T 661 via pin 3 (precondition: pin 18 > 10 V). The line/power supply circuit starts to oscillate. Simultaneously, the current consumption drawn via pin 2 rises and the winding E-D of the ZNT takes over the operating voltage supply function (D 647, R 647, C 647).

Oscillator in IC TDA 3640

The control pulses for the T 661 are generated by an oscillator which operates on the threshold principle where C 653 is an externally connected frequency-determining component (oscillator retaining range 14-17 kHz approx.). The oscillator oscillates at a free-running frequency until the reference pulses from the ZNT exceed 1 V_p at pin 12. In full operating condition (ON) a voltage of about +5 V_p is applied to pin 12.

Line Output Stage

The deflection transistor T 521 is activated in stand-by mode. The cyclic line-frequency control of the deflection transistor corresponds to the "ON" operating mode. The power for the horizontal sweep circuit is derived from the electromotive force of coil M-N so that no additional operating voltage is necessary for T 521.

Voltage Stabilisation

In stand-by mode the pulse from winding E-D (tightly coupled with winding A-B) is used as a reference for stabilisation. The controlled variable is +10.5 V on pin 2 TDA 3640.

In full operating condition, that is "ON", the voltage in the horizontal sweep circuit (transformer winding M-N) must be stabilised to a constant level. This is achieved by means of a reference pulse from winding C-D which is tightly coupled with winding M-N. The resulting direct voltage obtained via D 633 is proportional to the width of the picture or high voltage and is applied to pin 10 and compared with the reference voltage (about 3 V) on pin 11. In this part of the circuit the +C voltage is adjusted by means of R 637 to 196 V and 192 V for 25" receivers and 28" receivers, respectively.

Protective Circuits of TDA 3640

The protective circuits respond immediately if:

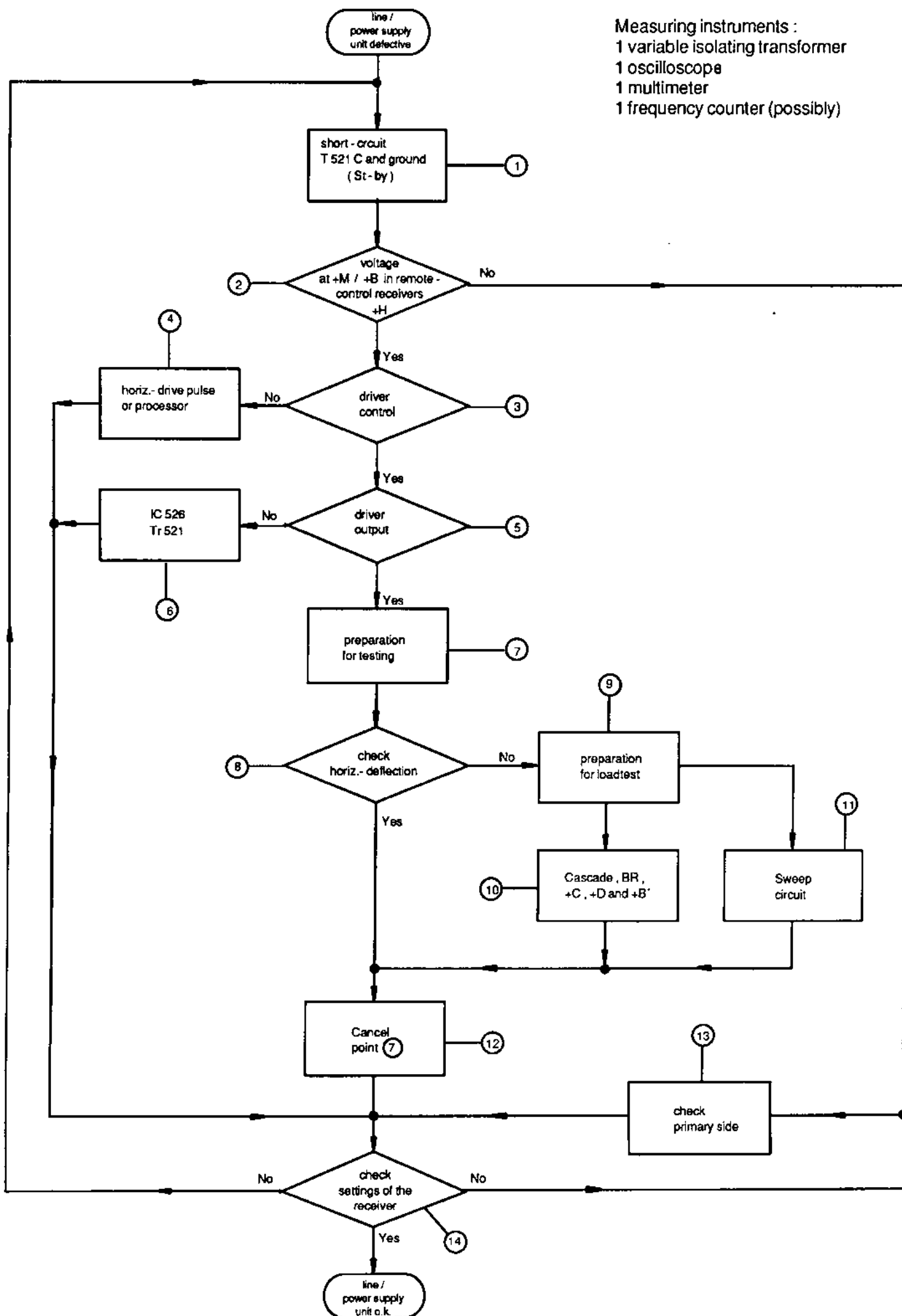
- the operating voltage on pin 2 is too low (≤ 7 V);
- I_{CE} of T 521 is too high (more negative than -1 V at pin 7);
- the power supply voltage is too high (voltage at pin 18 is 2.8 V higher than at pin 2);
- the power supply voltage is too low (voltage at pin 18 is 1.4 V lower than at pin 2);
- the high voltage is excessively high (line flyback pulses ≥ 6 V at pin 12);
- the crystal temperature is too high ($> 135^{\circ}\text{C}$).

Protective Circuits of TDA 8140

The protective circuits respond immediately if:

- the operating voltage at pin 2 is too low (< 7 V);
- interference pulses (incorrect control pulses) occur during line flyback;
- the crystal temperature is too high ($> 160^{\circ}\text{C}$).

Measuring instruments :
 1 variable isolating transformer
 1 oscilloscope
 1 multimeter
 1 frequency counter (possibly)

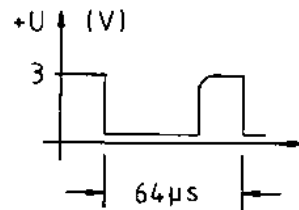


Explanation of the individual steps in the flow chart:

1. Disconnect the mains plug
Connect the horizontal sweep transistor T 521 collector to ground (stand-by)

2. Switch on the receiver.
Check the secondary voltages:
 - +M 10-12.5 V (I_{max} 350 mA)
 - +B 9-11 V
 - +H 5 V (only RC receivers)

3. TDA 8140 oscillogram pin 7 15625 Hz



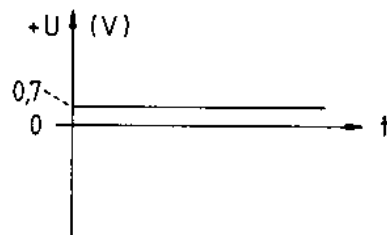
voltage
voltage
voltage

pin 2 8-12 V
pin 6 > 2.5 V = normal operation
pin 6 0 V = stand-by (RC)

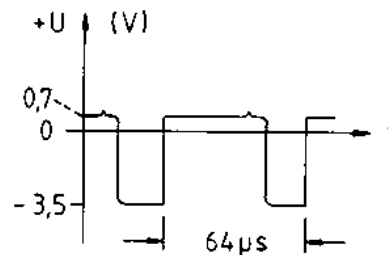
4. Deflection module (CUC 3510) and IF/sync module: check line output Control unit - processor: check stand-by - output

5. Oscillogram of base T 521

IC 526 pin 6: 0 V



IC 526 pin 6: > 2.5 V



6. Check TDA 8140 with externally connected components and T 521

7. Preparations for checking the line output stage

- Disconnect the mains plug; remove Si 624

- Open connection $\diamond$ of the line/mains transformer TR 665

- Remove the short circuit from T 521

- For decoupling apply a direct voltage of 12 - 20 V to contact +M via a diode (cathode to cathode of D 691).

- Switch on the receiver by means of the remote control (Telepilot).

- On contact $\diamond$ of TR 665 feed in a direct voltage of about 130 V (approx. 450 mA). When using the built-in power supply: Connect the (626 electrolytic capacitor ground to the secondary ground and the anode of the capacitor to contact $\diamond$ of TR 665. Switch on the voltage regulating transformer (RT) and set it to 0 V. Connect the mains plug of the receiver to RT. Push the power button on the receiver and set RT to 100 VAC.

8. If the +C voltage is correct the picture is too large. Additionally, an intensive mains hum will be visible when using the built-in power supply. The externally fed in low potential may now be switched off. The receiver operates on its own supply.

Warning! Do not use the remote control to switch the receiver to standby again. Use the power switch or switch off the EHT, instead.

When restarting always apply the low potential first and switch on the receiver with the remote control.

9. Preparations for load test

Disconnect the mains plug and switch off the external high voltage (120 V) possibly connected to TR 665/contact $\diamond$.

10. Unsolder cascade U a.c. (cascade and picture tube test)

Check the load at the secondary voltage sources:

Ohmic resistance between ground and points +C, +D, +B, +B', +M, +H. If the polarity is correct (rectifier diode in high-resistance direction) the measured resistance must be higher than 4 kOhm.

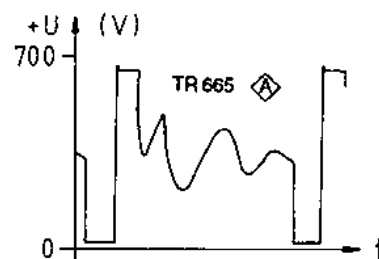
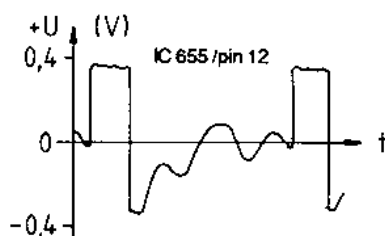
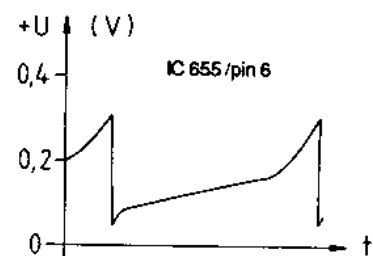
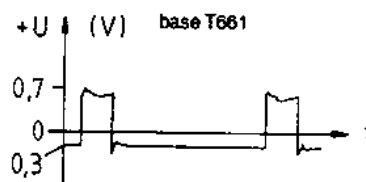
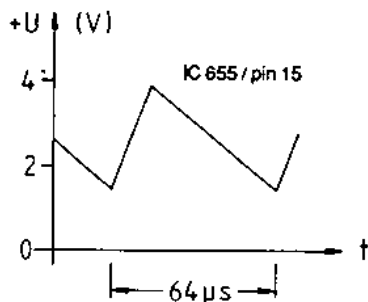
11. Check T 521 and sweep circuit (horizontal deflection yoke 1.5-3.5 Ohm)

12. Cancel all preparatory measures under 7.

13. TR 665 voltage point $\diamond$ 300 V approx.

TDA 3640 voltage pin 18 13 V approx., voltage pin 17 6 V approx.

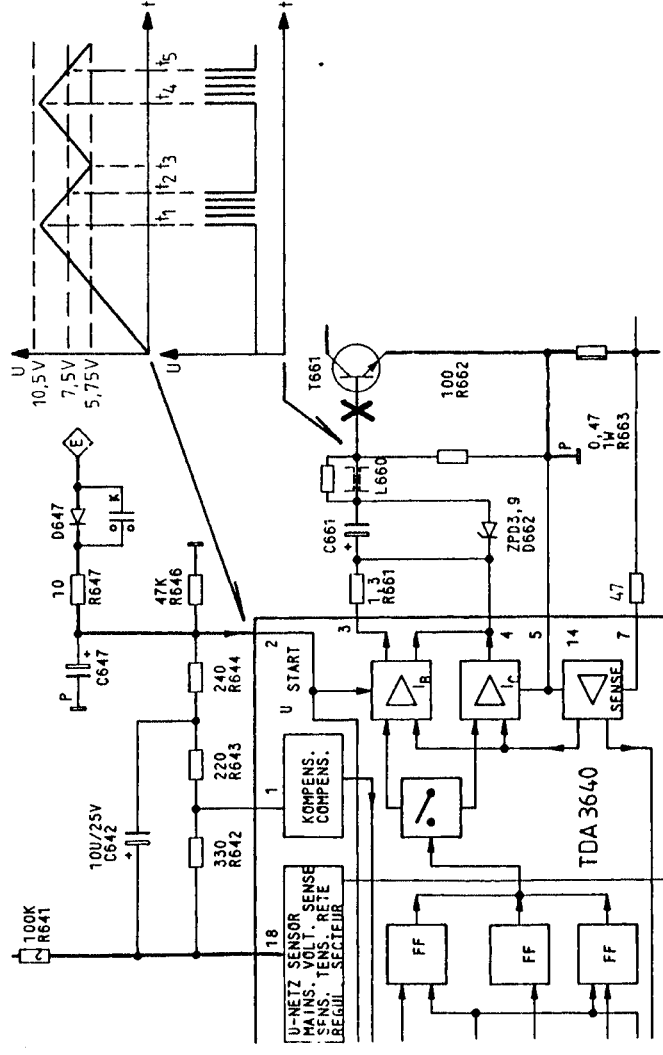
voltage pin 2 10.5 V approx., voltage pin 16 3 V approx.



Possible causes of trouble: Si 624, T 661, D 666, R 647, TDA 3640.
Remove short circuit at T 521.

Simplified Test for the Startup Sequence

The startup sequence can be checked without the mains switching transistor T 661.
For this purpose, disconnect the base of T 661 from the circuit:



Connect an oscilloscope to pin 2/C 661. Switch on the receiver. On pin 2 of the IC the starting voltage must rise to just below the controlled variable of 10 V (time t_1); current consumption approx. 100 μ A.

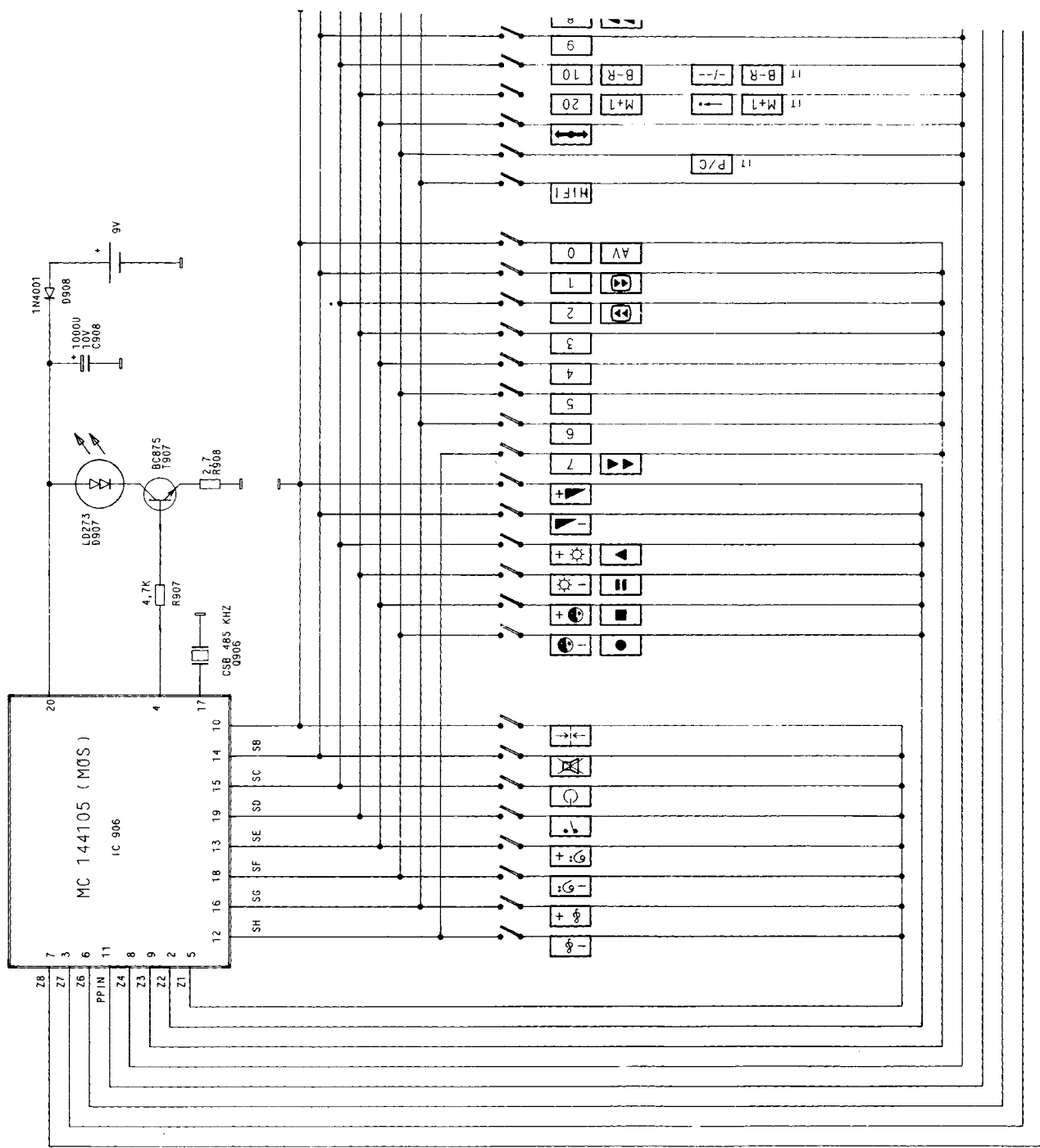
Time t_1 : IC 655 starts to oscillate (current consumption 15-20 mA) and supplies via pin 3 control pulses at approx. line frequency (1.5 V_{pp}). The voltage divider R 642, R 643, and R 644, is at too high a resistance to provide sufficient current for the IC to be in operation (20 mA required). There is no operating voltage obtained via D 647. The voltage at pin 2 decreases.

Time t_2 : When the voltage U_B reaches 7.0 V the IC 655 stops driving the base. U_B continues to decrease.

Time t_3 : When the voltage U_B reaches 5.75 V the IC 655 switches off; the current consumption is now only 100 μ A approximately. U_B rises and the cycle starts again at t_1 .

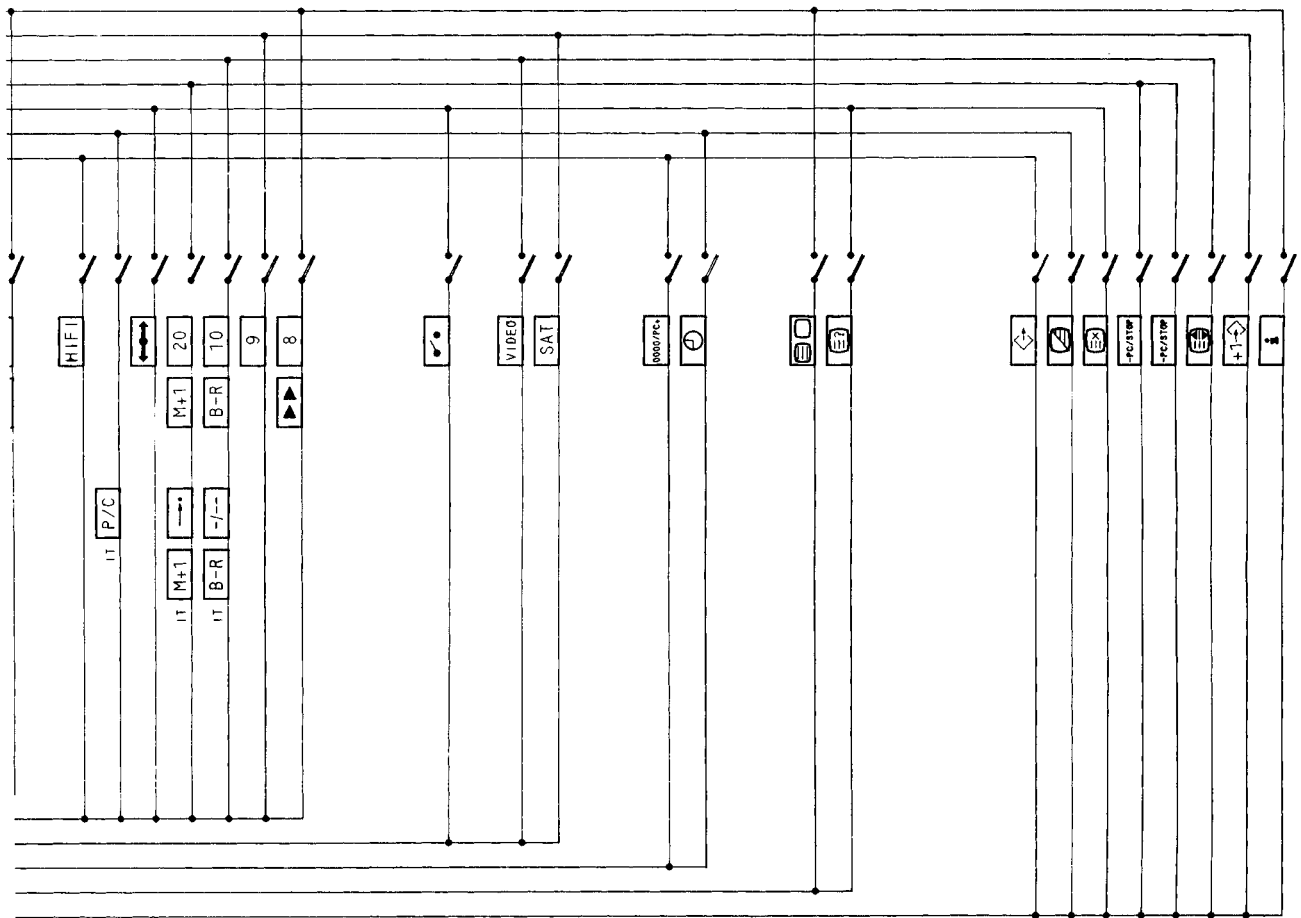
On pin 15 of the IC the cyclic oscillation and switching off process can be identified by the packets of pulses.

Check the voltage +C according to the circuit diagram and readjust it with R 637, if necessary; check the power supply voltage regulation with the variable-voltage transformer ($\pm 10\%$).

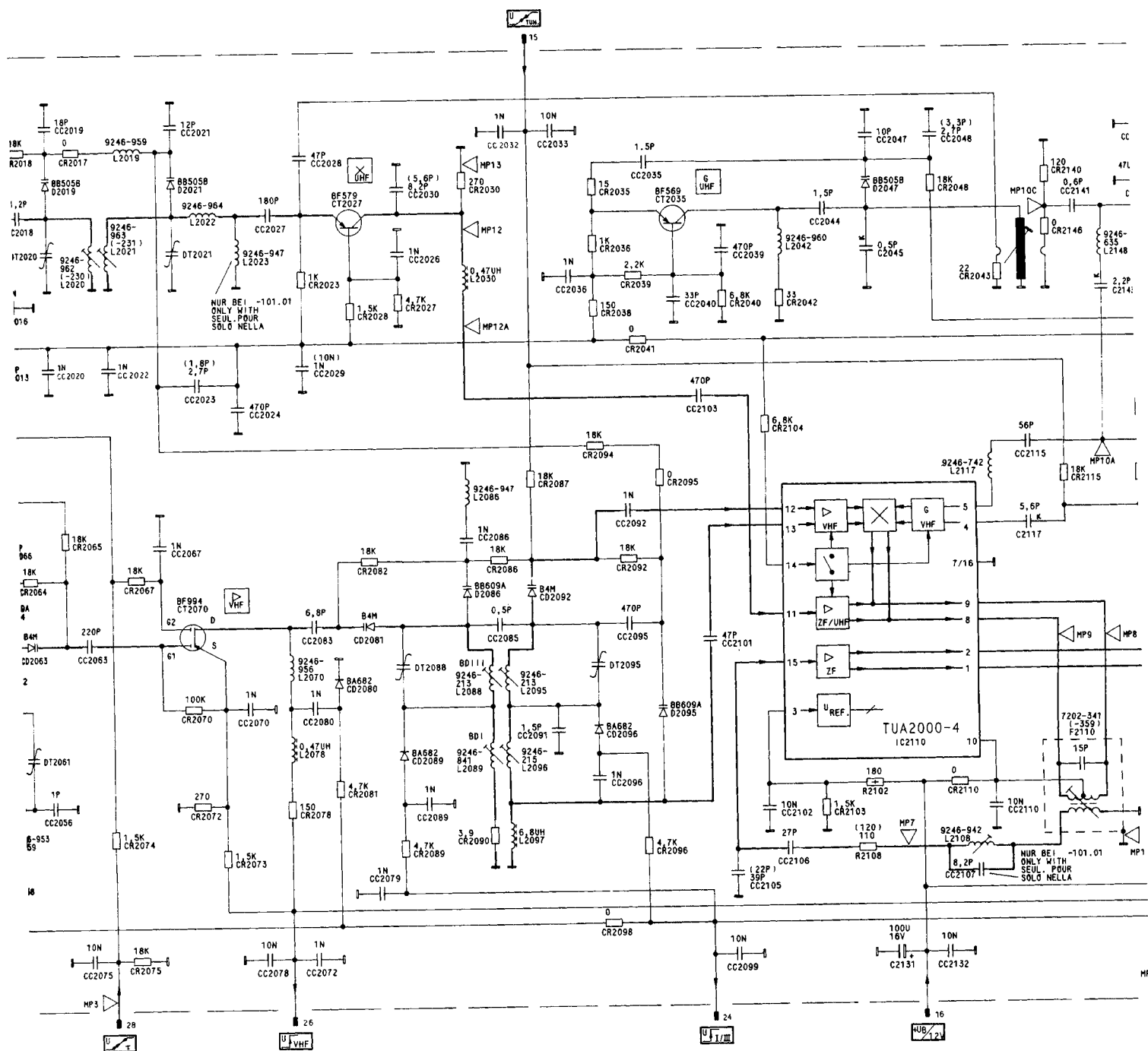


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 TC 660 -050.02
 -050.03 IT
 -050.04 FR
 -050.05

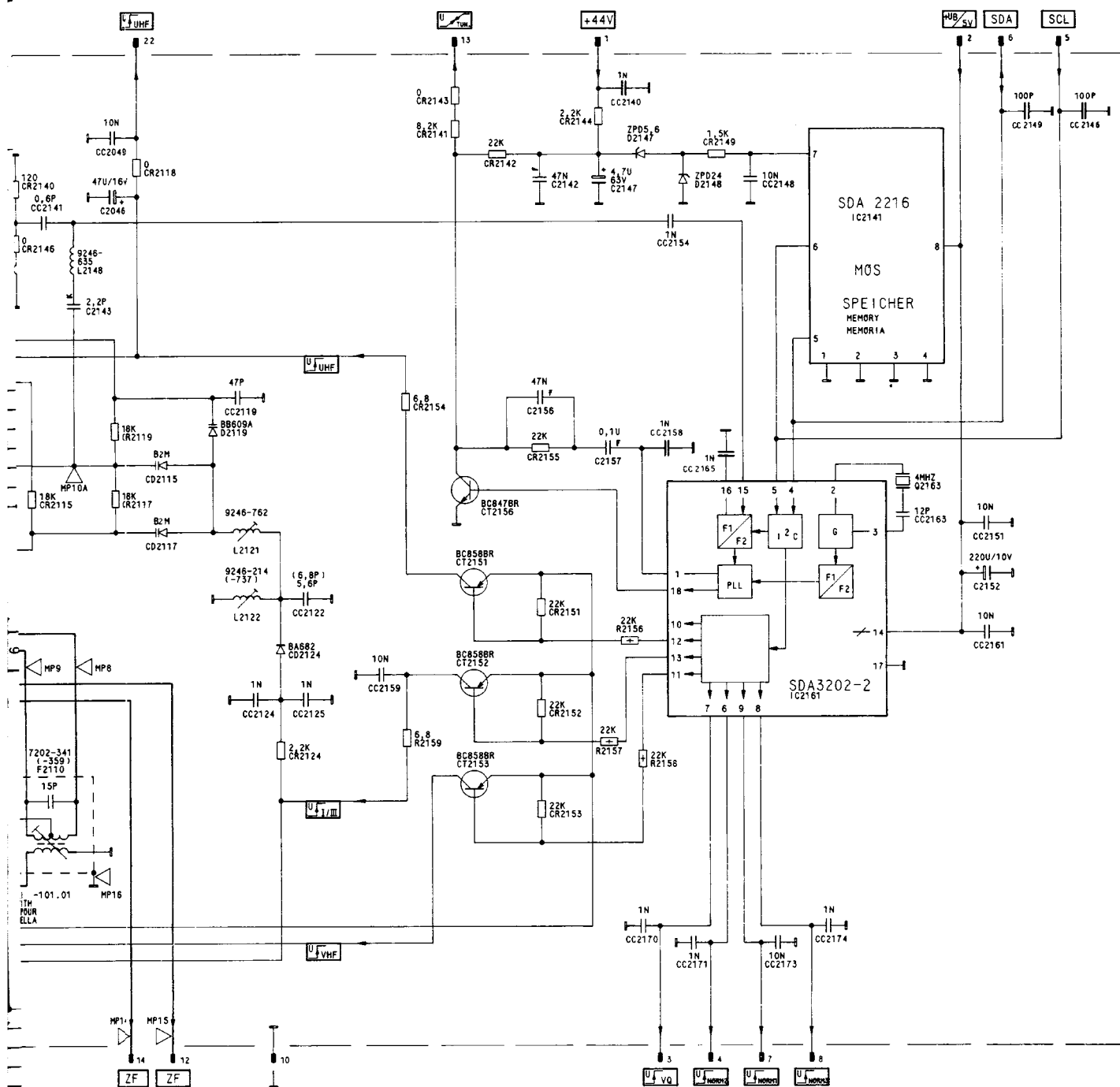
9V

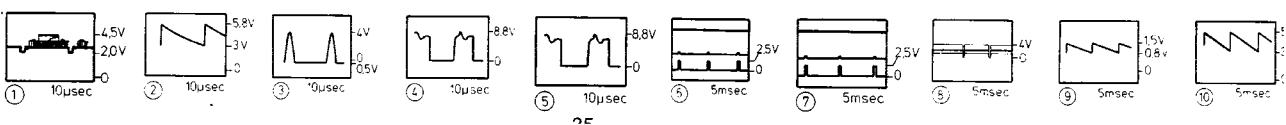
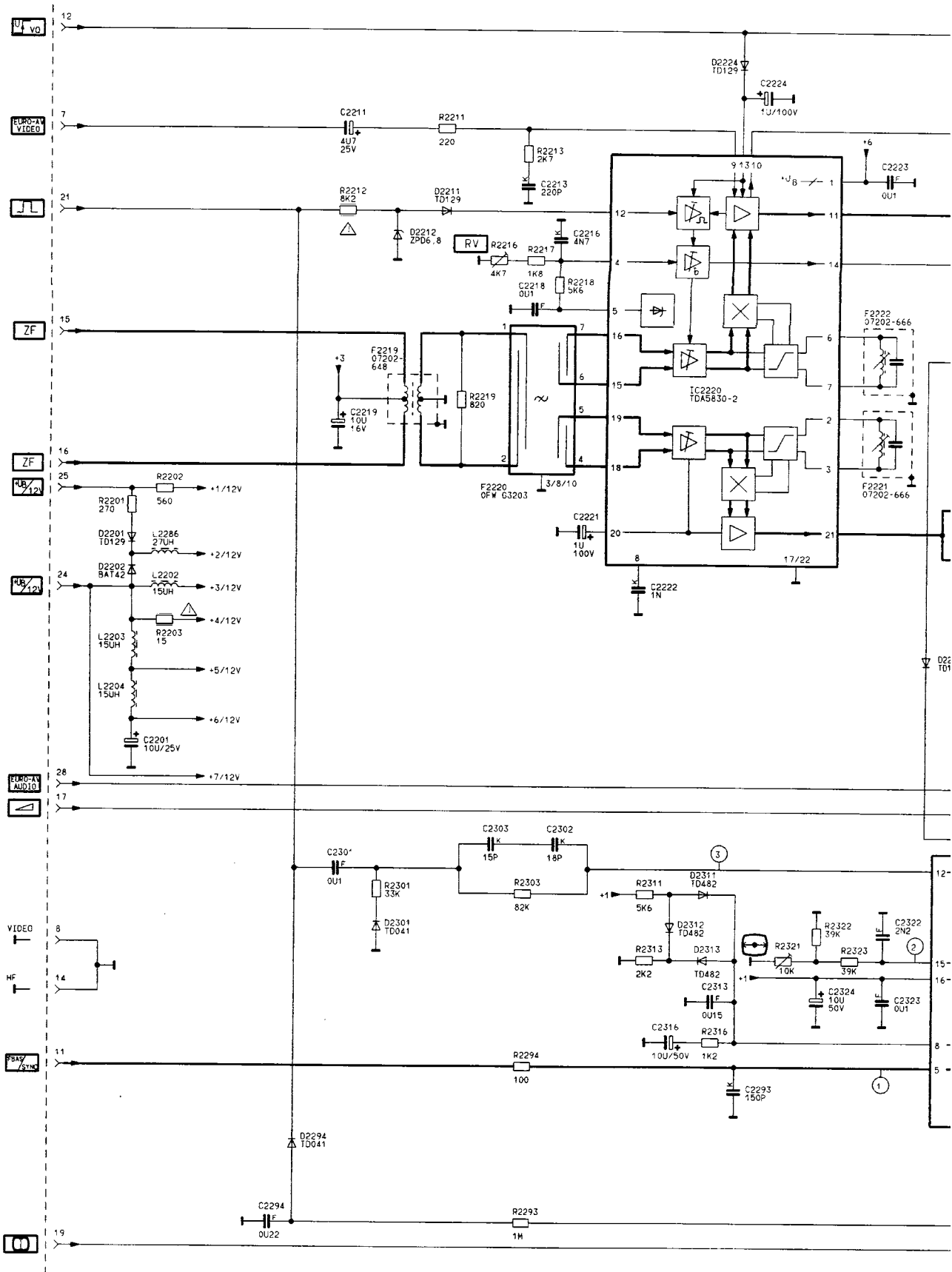


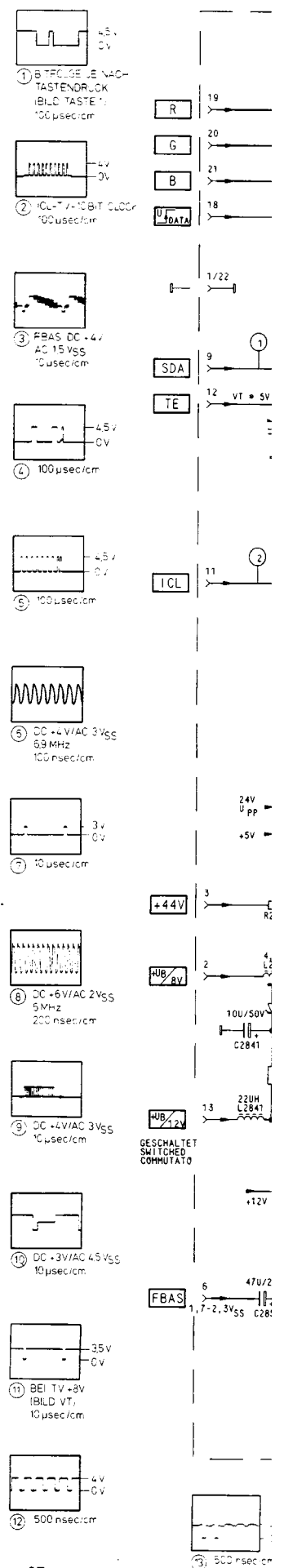
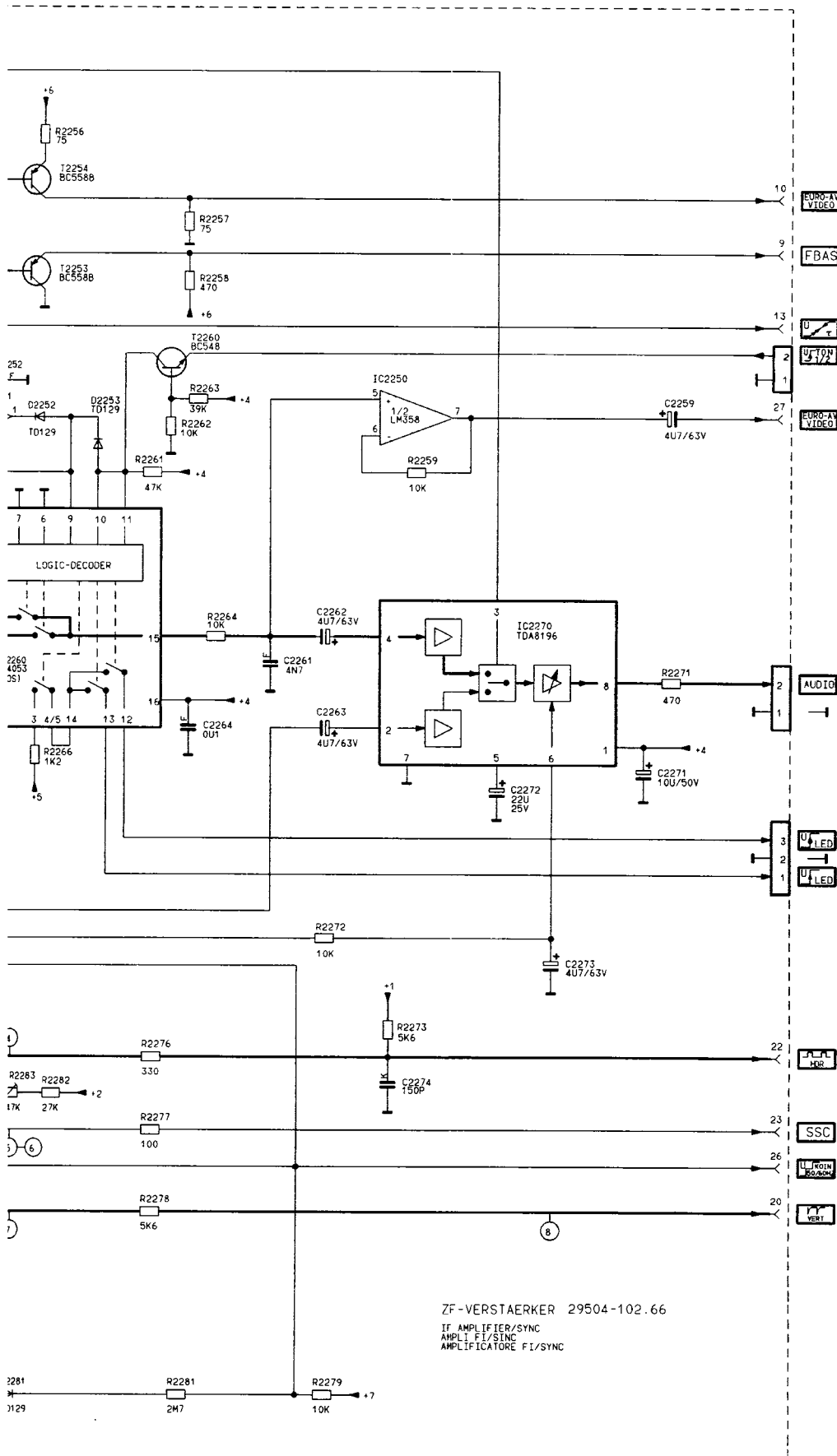
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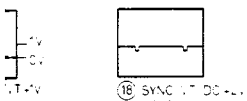
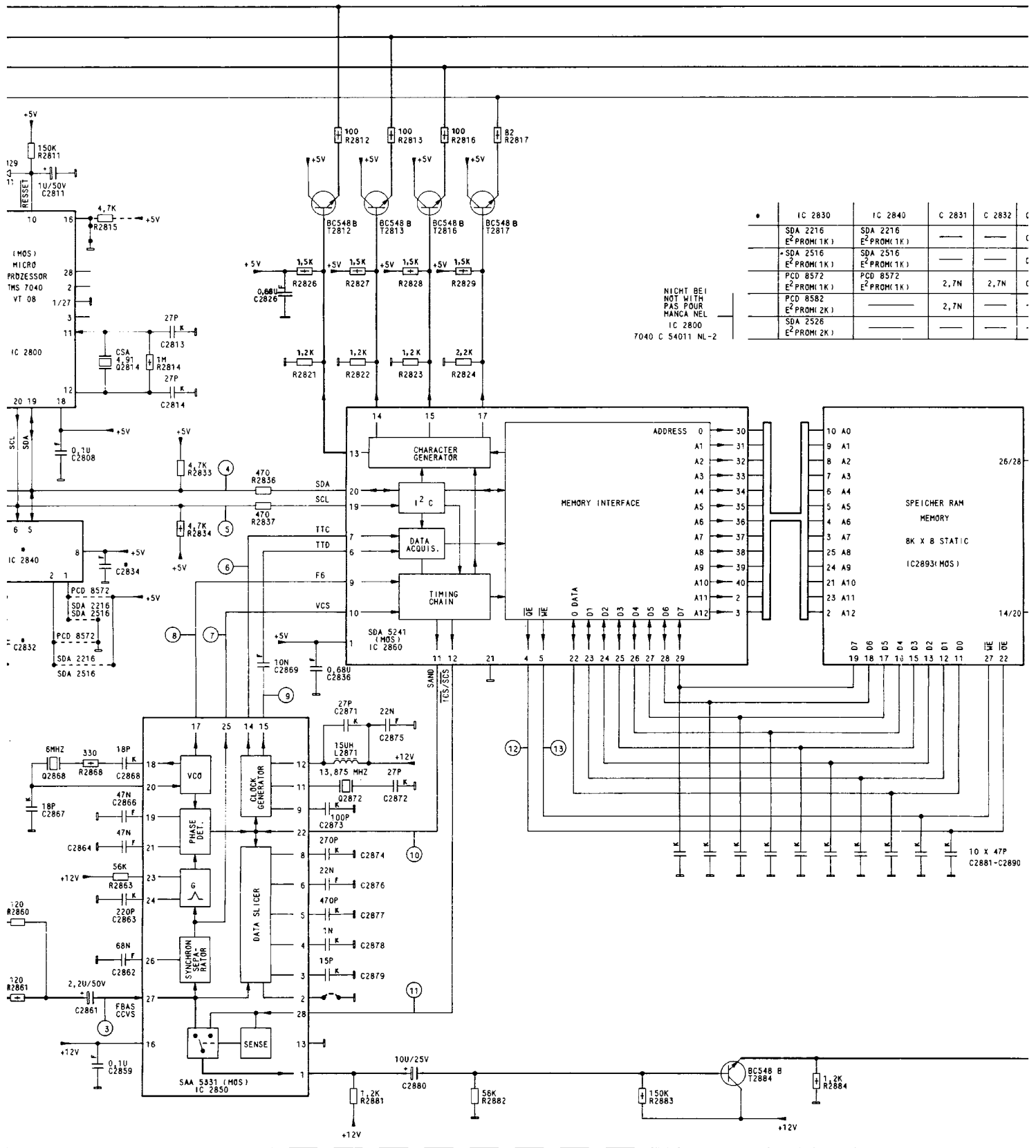


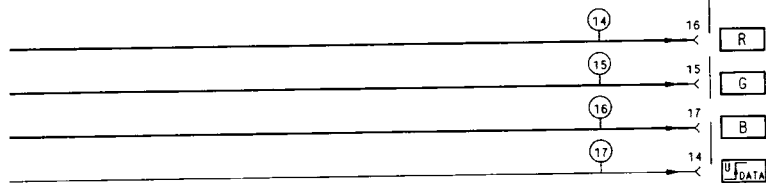
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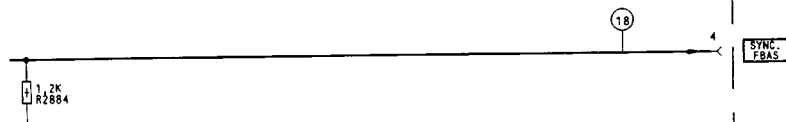
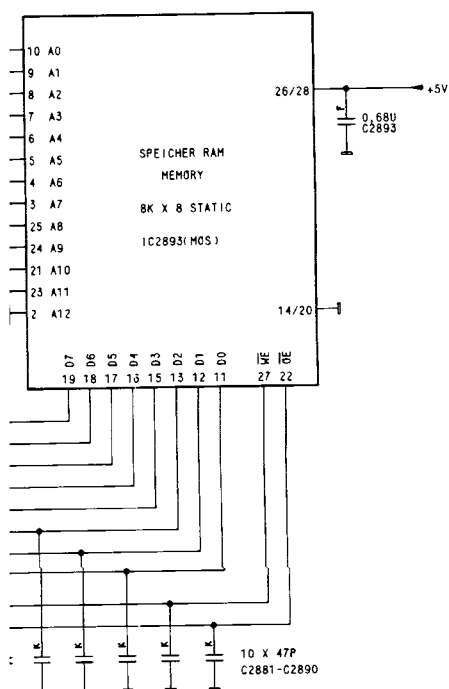








830	IC 2840	C 2831	C 2832	C 2834	R 2831	R 2832	R 2849	D 2849	R 2804
16	SDA 2216 E ² PROM(1K)	—	—	0,1U	—	—	4,7K	ZPD 24	—
16	SDA 2516 E ² PROM(1K)	—	—	0,1U	—	—	—	—	—
72	PCD 8572 E ² PROM(1K)	2,7N	2,7N	0,1U	10K	10K	—	—	—
82	—	2,7N	—	—	10K	—	—	—	4,7K
26	—	—	—	—	—	—	—	—	4,7K



VT-Nachrüstung und Anpassungsabgleich

Beim Nachrüsten der Videotext-Steckkarte muß die Videotext-Steckerplatte entfernt werden

Der Einsteller R 2857 steht bei Auslieferung auf Linksanschlag (kleinste Höhenanhebung, ca. 2 dB). Treten trotz einwandfreiem Antennensignal Zeichenfehler auf, R 2857 langsam nach rechts verstellen, bis Fehler verschwinden. Nicht weiterdrehen, da Fehlerhäufigkeit wieder zunehmen kann.

Während des Abgleiches ist es notwendig, die Seite 199 ständig neu anzuwählen, da nur so die Seite neu eingelesen wird und eine Beurteilung der Fehlerschwelle möglich ist.

VT (GB: Teletext) instalation and matching adjustment

When fitting the Videotext (GB: Teletext) plug-in board, the Videotext plug plate has to be removed

The control R 2857 is set in the fully anti clockwise position when the unit is delivered (smallest treble boost: approx. 2 dB). If, with a perfect aerial signal character faults occur, turn R 2857 slowly clockwise until the faults disappear. Do not turn R 2857 up any further as error rate may increase again.

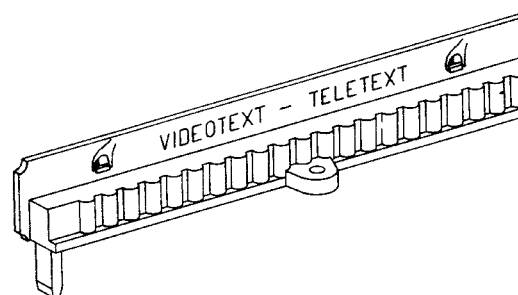
Page 199 must always be selected anew during the adjustment, as only this effects a new read-in of the page making it possible to evaluate the error level.

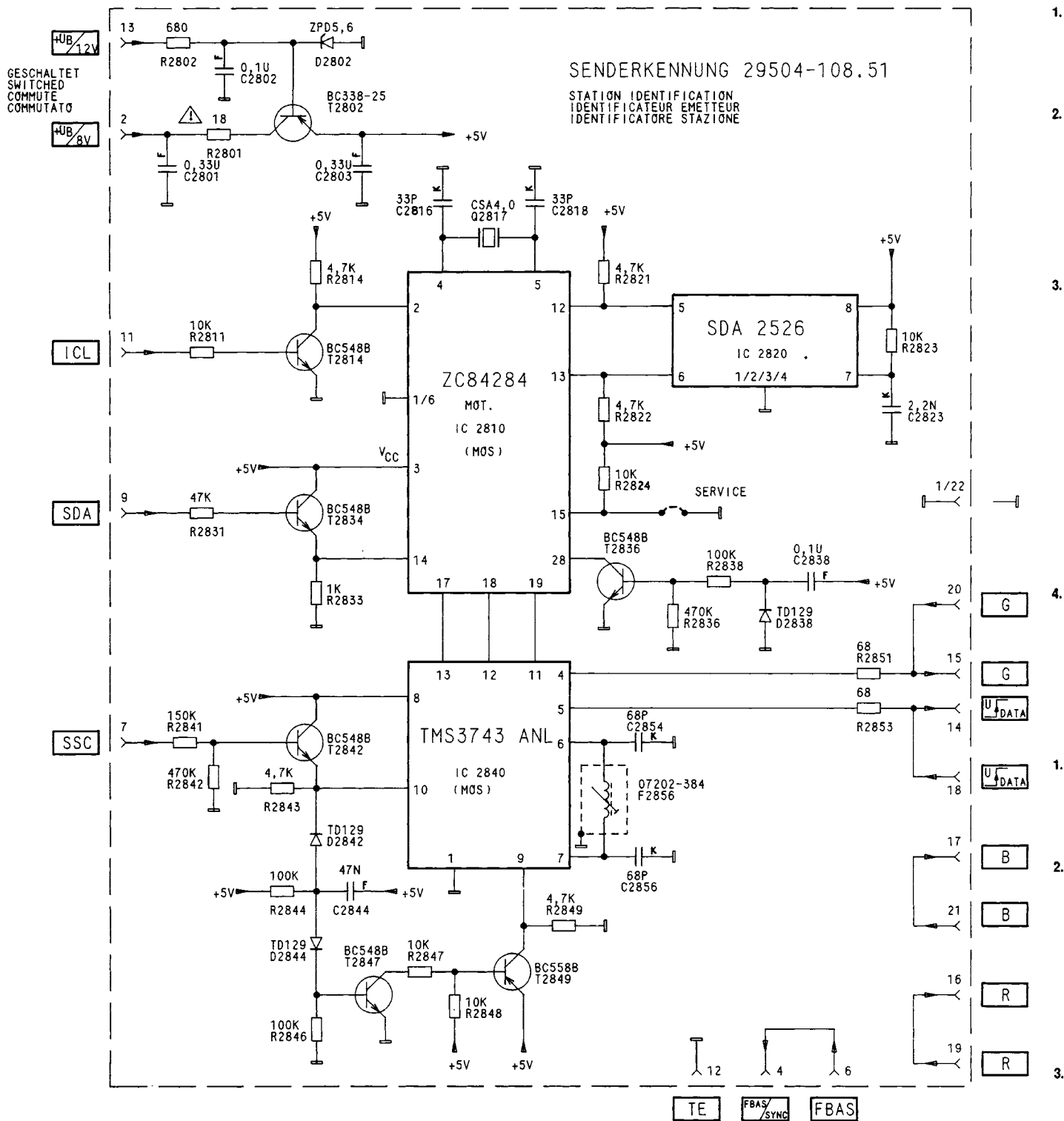
Montaggio e taratura d'addattamento della scheda ad innesto

Nei montare la scheda televideo togliere la piastrina televideo

Il regolatore R 2857 viene fornito col cursore girato completamente all'estrema sinistra (minima esaltazione delle alte frequenze, ca. 2 dB). Se si manifestano errori di carattere, nonostante un perfetto segnale d'antenna, girare lentamente il cursore di R 2857 verso destra fino ad eliminare gli errori. Non girarlo oltre può riaumentare la presenza degli errori.

Durante la taratura è necessario selezionare ripetutamente la pagina 199, poiché solo così è possibile una nuova immissione della pagina ed una valutazione della soglia degli errori.





Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la
sostituzione di una scheda ad innesto

1. Weißabgleich

- FuBK-Testbild einspeisen.
- $\odot$ min., $\odot$ nom., $\odot$ max. einstellen.
- Regler VG und VB (Bildrohrplatte) so einstellen, daß keine Verfärbungen in den Grauwerten sichtbar sind.

2. Sperrpunktgleich

Eine manuelle Einstellung ist nicht möglich, da die Steckkarte eine automatische Dunkelstromregelung besitzt. Kontrolle des Sperrpunkts (Oszilloskop erforderlich).

- FuBK-Testbild einspeisen.
- $\odot$ min., $\odot$ nom., $\odot$ min., einstellen.
- Tastkopf an den Kollektoren der Transistoren T 736, T 756, T 776 anhängen (Bildrohrplatte). Die Schwarzwerte der drei Kathodensignale liegen bei ca. 140-150V.

3. Einstellungen im Farbkanal

- PAL-Testbild einspeisen.
- FK nom., H nom. K max. einstellen.
- IC-Pin 28 vom TDA 4555 mit +12V verbinden.
- IC-Pin 17 vom TDA 4555 mit Masse verbinden.
- Mit Trimmer C9516 die durchlaufenden Farbbalken zum Stehen bringen.
- Kurzschlußbrücken entfernen.
- Tastkopf an MP 12, mit Regler BP und Spule LZ die Doppelbilder des B-Signals zur Deckung bringen.
- SECAM-Testbild einspeisen.
- Tastkopf an Pin 1 vom TDA 4555 anschließen, mit Spule DR Nulllinie des (R-Y)-Signals auf Zeilenniveau bringen.
- Tastkopf an Pin 3 vom TDA 4555 anschließen, mit Spule DB Nulllinie des (B-Y)-Signals auf Zeilentastniveau bringen.
- Spule F 2521 so einstellen, daß das (B-Y)-Signal keine Überschwinger hat.

4. Strahlstrom

- Der Regler "SSB" wird werkseitig auf Mittelwert eingestellt.
- Sollte bei vollem Kontrast und normal eingestellter Helligkeit in Spitzenweißfeldern des Sendertestbildes eine Defokussierung (starke Unschärfe bei weißen Schriftzeichen in Bildröhrenmitte) auftreten, so muß mit Regler "SSB" auf scharfe Schriftkonturen eingestellt werden (Reduzierung des Spitzenstrahlstromes).

1. White level adjustment

- Display colour bar test pattern.
- Set $\odot$ to min., $\odot$ to nom., $\odot$ to max.
- Adjust presets VG and VB (CRT socket board) so that the picture does not show any colouration.

2. Adjustment of cut-off point

Manual adjustment is not possible, as the circuit board employs an automatic dark current control circuit.

To check cut-off point (oscilloscope required), proceed as follows:

- Display colour bar test pattern.
- Set $\odot$ to min., $\odot$ to nom., $\odot$ to min.
- Connect test probe to collectors of T 736, T 756, T 776 (CRT socket board).
- The black levels of the three cathode signals should be 140-150V.

3. Adjustments in chroma channel

- Display PAL test pattern.
- Adjust colour level and brightness to nominal value, contrast to maximum.
- Connect pin 28 of IC TDA 4555 to +12V supply.
- Connect pin 17 to IC TDA 4555 to chassis.
- Adjust trimmer C9516 for stationary pattern in colour bars.
- Remove wire links.
- Connect test probe to test point MP 12. LBring the double image produced by the B-signal to coincidence by adjusting the preset BP and the coil LZ.

- Display SECAM test pattern.
- Connect test probe to pin 1 of IC TDA 4555.
- Use coil DR to align zero level of the (R-Y) signal with the line black level.
- Connect test probe to pin 3 of IC TDA 4555.
- Use coil DB to align zero level of the (B-Y) signal with the line black level.
- Adjust coil F2521 so that the (B-Y) signal is free of overshooting.

4. Beam current

- During manufacture the control "SSB" is adjusted to middle value.
- If during max. contrast and normal brightness adjustment the peak-white fields of the test picture should be defocused (in the middle of the screen white letters are very distorted) the contours of the letters must be adjusted using control "SSB" (reducing the peak beam current).

1. Taratura del bianco

- Applicare un monoscopio FuBK.
- Regolare $\odot$ al minimo, $\odot$ sul valore nominale e $\odot$ al massimo.
- Con i regolatori VG e VB (piastra cinescopio) eliminare eventuali macchie di colore.

2. Taratura del punto di blocco

Una regolazione manuale non è possibile, poiché questa scheda incorpora una regolazione automatica della corrente d'interdizione.

Controllo del punto di blocco (è necessario un oscilloscopio):

- Applicare un monoscopio FuBK.
- Regolare $\odot$ al minimo, $\odot$ sul valore nominale e $\odot$ al minimo.
- Collegare la sonda ai collettori dei transistor T 736, T 756, T 776 (piastra cinescopio).
- Valore nero dei tre segnali catodici ca. 140-150V.

3. Regolazione del canale colore

- Applicare un monoscopio PAL.
- Regolare FK e H sul valore nominale, K al massimo.
- Sull'integrato TDA 4555 collegare pin 28 a +12V.
- Sull'integrato TDA 4555 collegare pin 17 a massa.
- Con C9516 fermare le barre colorate scorrevoli.
- Togliere i cortocircuiti.
- Collegare la sonda a MP 12, con il regolatore BP e la bobina LZ portare a copertura le immagini doppie del segnale B.
- Applicare un monoscopio SECAM.
- Collegare la sonda al pin 1 dell'integrato TDA 4555, con la bobina DR portare la linea zero del segnale (R-Y) sul livello della frequenza di riga.
- Collegare la sonda al pin 3 dell'integrato TDA 4555, con la bobina DB portare la linea zero del segnale (B-Y) sul livello della frequenza di riga.
- La bobina F2581 applicarla così in modo che il segnale (B-Y) sia chiaro.

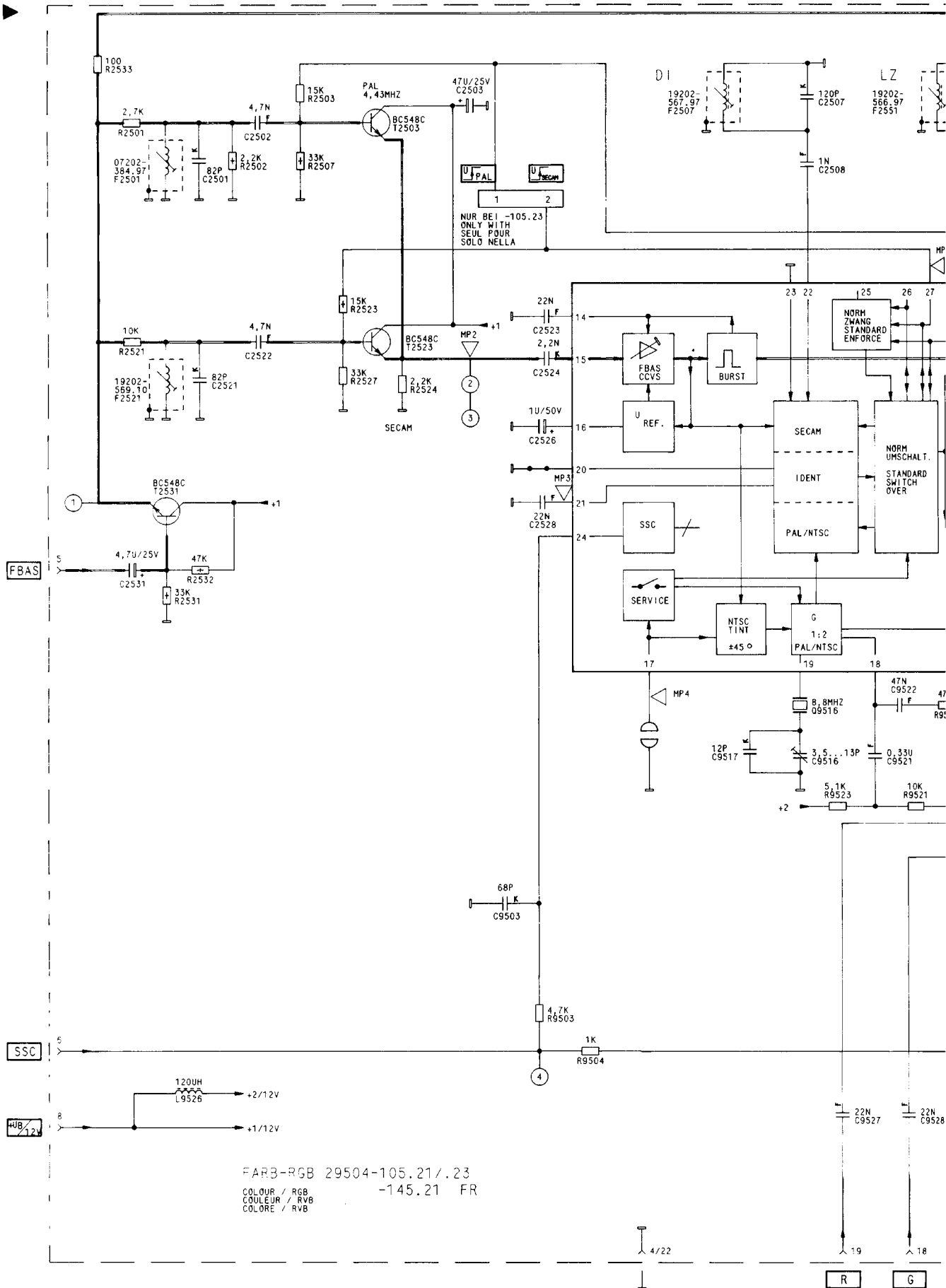
4. Corrente catodica

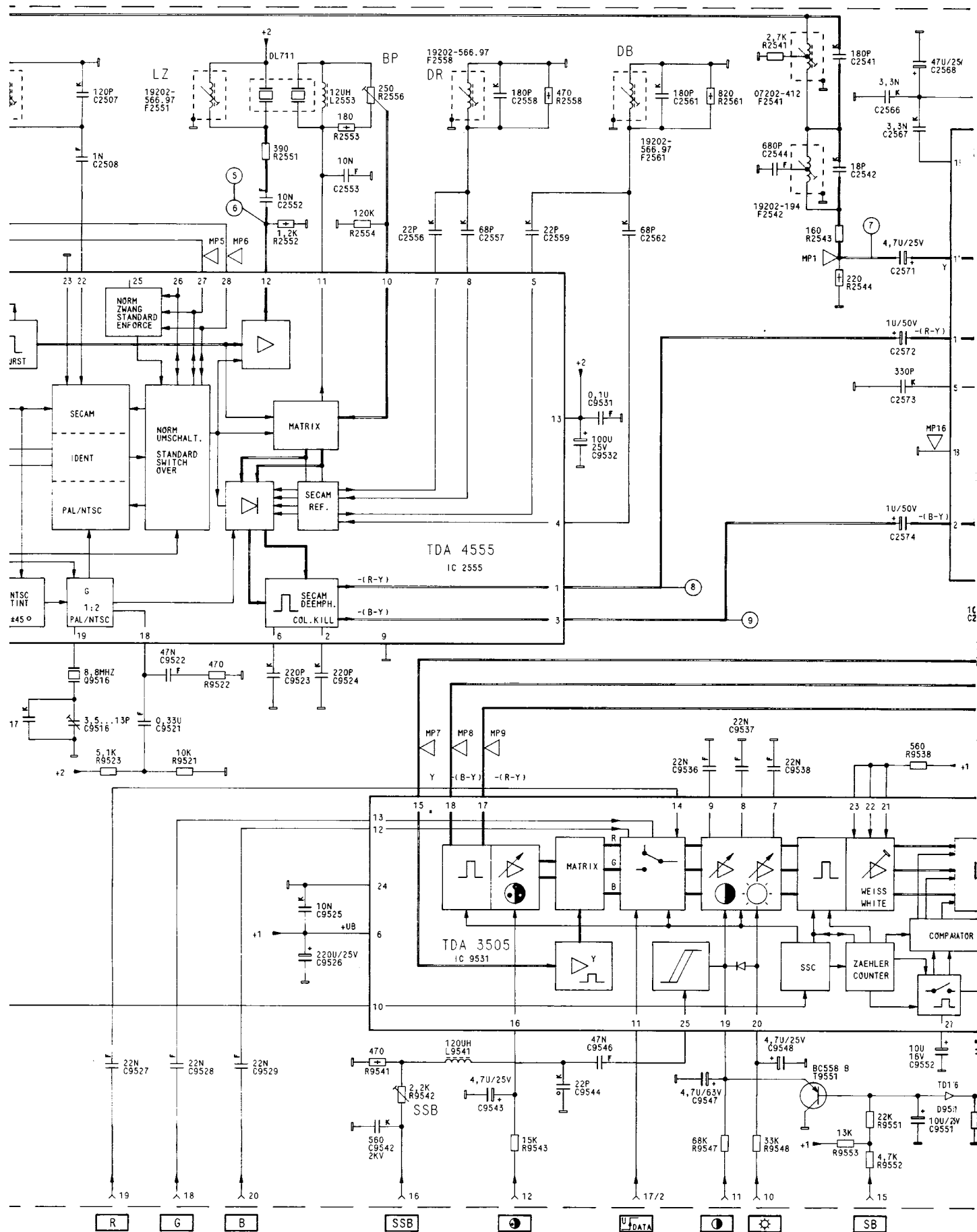
- Il regolatore "SSB" viene regolato già in fabbrica su valori medi.
- Se con il contrasto al massimo ed una regolazione normale della luminosità dovesse presentarsi una sfocallizzazione nei campi ultrabianchi del cinescopio (le lettere bianche al centro del cinescopio risultano molto sfuocate), agire sul regolatore "SSB" per mettere a fuoco i contorni delle lettere (riducendo la corrente catodica di picco).

FBA

SSB

HUB





Ersatzteilliste (Auszug) · List of Spare-Parts (extract) · Lista ricambi (estratto)

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni	Benennung	Description	Désignation	Denominazione
			<u>Steckkarten</u>	<u>Plug-in circuit boards</u>	<u>Schede</u>	
1		29504-101.01	Kabeltuner	Cable tuner	Tuner per tv cavo	
2		29504-102.64	ZF-Verstärker	Amplifier IF	Amplificatore FI	
oder						
2		29504-102.65	ZF-Verstärker	Amplifier IF	Amplificatore FI	
2		29504-102.66	ZF-Mono-2 Ton (20/21)	ZF-Mono	ZF-Mono	
2		29504-142.65	ZF-Verstärker (FR)	Amplifier IF	Amplificatore FI	
5		29504-105.21	Farb/RGB (CTI)	RGB/colour (CTI)	RGB/colore (CTI)	
5		29504-175.01	Farb-RGB (Spanien)	RGB/colour (Spain)	RGB/colore (SP.)	
5		29504-145.21	Farb-RGB (FR)	RGB/colour (FR)	RGB/colore (FR)	
8		29504-108.04	Videotext 2805	Videotext 2805	Televideo 2805	
8		29504-108.92	Videotext VT	Videotext VT	Televideo VT	
9		29504-108.51	Senderkennplatte	Plate	Piastra	
			<u>Bedienungseinheit</u>	<u>Keyboard unit</u>	<u>Unità comandi</u>	
			(29501-061.01)	(29501-061.01)	(29501-061.01)	
10		29624-415.01	Frontpl. m. Tasten	Front panel w. button	Piastra front..con tasti	
11		29303-452.01	Netzsteckerplatte	Plate mains switch	Piastra interruttore di rete	
12		29303-506.18	Snapfolie	Elastic foil	Foglia elastica	
13		29303-925.41	Keyboardplatte	Keyboard PCB	Piastra tastiera	
14		29304-013.17	LED-Platte kpl.	Plate LED cpl.	Piastra LED cpl.	
14		29304-017.01	LED-Platte kpl.	Plate LED cpl.	Piastra LED cpl.	
			(Mono/Ton 1/2 Anz.)	(Mono/Sound)	(Mono/Audio)	
			<u>Mechanische Teile</u>	<u>Mechanical parts</u>	<u>Parti meccaniche</u>	
15		29304-070.54	Bildrohrplatte kpl.	Picture tube plate	Piastra cinescopio	
15		29304-070.37	Bildrohrplatte kpl.	Picture tube plate cpl.	Piastra cinescopio cpl.	
15.1		29303-752.96	Bildrohrfassung	Picture tube socket	Zoccolo cinescopio	
16		29700-320.01	Bausteinhalter (CTI)	Module holderplate cpl.	Supporto modulare	
16		29700-315.01	Bausteinhalter	Module holder plate cpl.	Supporto modulare	
17		29303-153.01	Montageclip	Mounting clip	Clip di montaggio	
18		29703-291.02	Netzschalter	Mains switch	Interruttore di rete	
19		29303-153.12	3x Montageclip	Mounting clip	Clip di montaggio	
20		09621-113.02	4x Sicherungshalter	Fuse holder	Portafusibile	
21		29303-393.01	Kopfhörerbuchse	EAR phone socket	Presa cuffia	
22		29303-119.03	Euro-AV-Buchse	Euro-AV-socket	Presa euro/scart	
23		29500-503.05	Abdeckung (AV)	Cover (AV)	Copertura (AV)	
24		29303-153.02	Montageclip	Mounting clip	Clip di montaggio	
25		29303-156.01	Isolierscheibe	Insulating washer	Rondella isolante	
26		8104-982-014	Dämpfungssperle	Anti-vibration	Perlina ammortizzatrice	
30		29303-364.01	Tuner Aufnahme	Tuner holder	Supporto tuner	
			<u>Elektrische Teile</u>	<u>Electrical parts</u>	<u>Parti elettriche</u>	
K. 501		8324-800-044	Kaskade	Cascade	Moltiplicatore in cascade	
		BG 2087-642-1010		BG 2087-642-1010	BG 2087-642-1010	
		72003-090.02	Fokusregler (1)	Focusing control (1)	Regolatore del fuoco (!)	

Pos. No.	Fig. No.	Bestell-Nr. Part No.	Benennung Description Désignation Denominazione
		Réf. Nr. d'ordinazioni	



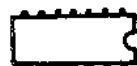
TR 665 29201-022.04



F 808 8602-331-085 4,0 MG



L 336 8140-526-451
L 337 8140-526-451
L 513 29203-110.97
L 514 09245-804.21
L 517 09240-110.21 2,2 MH
L 519 09245-882.21
L 521 09278-308.01
L 601 29500-812.97
L 660 09278-308.01
L 661 09278-314.01
L 676 8140-525-974
L 806 8140-526-327
L1213 07202-370.97



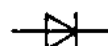
IC 365 8305-302-241 TDA 1905
IC 411 8305-338-170 TDA 8170
IC 526 8305-338-140 TDA 8140
IC 555 8305-338-145 TDA 8145
IC 576 29502-427.54
IC 655 8305-353-640 TDA 3640
IC 676 8305-205-765 7812/3 %
IC 686 8305-205-701 78 M 05
IC 696 8305-007-808 7808/5 %
IC 811 8305-158-018 SDA 2010 A 025
IC 811 8305-205-676 MC 6805 T 2
IC 820 8305-205-910 MC 144111 (MOS) (!)
IC 881 8305-202-242 UAA 2022 (MOS) (!)
IC 1211 8305-334-052 TDA 4052



T 111 8303-205-548 BC 548 B
T 363 8302-200-548 BC 548 C
T 521 8302-260-905 BU 903/2 SD 1432
T 661 8302-262-056 BUT 56 A
T 661 8302-263-344 F 344
T 683 8303-284-635 BC 635
T 736 8302-411-759 GF 759
T 737 8303-206-558 BC 558 C
T 742 8303-401-422 BF 422

Pos. No.	Fig. No.	Bestell-Nr. Part No.	Benennung Description Désignation Denominazione
		Réf. Nr. d'ordinazioni	

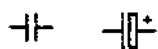
T 746 8303-406-421 BF 421
T 756 8302-411-759 GF 759
T 762 8303-401-422 BF 422
T 766 8303-406-421 BF 421
T 776 8302-411-759 GF 759
T 782 8303-401-422 BF 422
T 786 8303-406-421 BF 421
T 801 8303-207-548 BC 548
T 806 8302-202-538 BC 548
T 859 8303-201-548 BC 548
T 861 8303-200-548 BC 548
T 882 8303-201-548 BC 548
T 1204 8303-204-549 BC 549 B



D 331 8309-720-056 ZPD 5,6
D 333 8309-201-103 BA 157
D 354 8309-214-010 TD 129
D 355 8309-720-082 ZPD 8,2
D 411 8309-210-138 1 N 4936
D 421 8309-210-401 1 N 4934
D 422 8309-214-007 TD 041
D 512 8309-201-103 BA 157
D 513 8309-201-103 BA 157
D 514 8309-204-268 BYV 16
D 517 8309-709-180 ZY 180
D 518 8309-210-144 SKE 4 G/ 2
D 519 8309-204-228 BY 228
D 521 8309-701-504 BZX 85
D 522 8309-214-010 TD 129
D 528 8309-201-103 BA 157
D 541 8309-215-020 1 N 4004
D 543 8309-215-020 1 N 4004
D 551 8309-214-007 TD 041
D 552 8309-214-007 TD 041
D 553 8309-720-360 ZD 36
D 554 8309-215-045 1 N 4148
D 562 8309-707-035 ZPD 30
D 573 8309-201-033 BA 157
D 621 8308-560-384 SKB 380/C 1500 L 5 B
D 633 8309-201-005 BA 157
D 635 8309-198-586 BAT 86
D 647 8309-201-103 BA 157
D 662 8309-720-040 ZD 3,9 C/0,5 W
D 663 8309-201-101 BA 159
D 664 8309-201-101 BA 159
D 666 8309-204-268 BYV 16 TFK
D 671 8309-517-073 BYW 72
D 676 8309-722-360 MZ 2360
D 677 8309-215-006 1 N 4001
D 682 8309-517-099 BYW 98
D 683 8309-720-112 ZPD 12
D 684 8309-201-103 BA 157
D 685 8309-201-005 BA 157
D 691 8309-517-099 BYW 98-100
D 708 8309-707-012 ZPD 4,7

Pos. No.	Fig. No.	Bestell-Nr. Part No.	Benennung Description Désignation Denominazione
Réf. Nr. d'ordinazioni			

D 737	8309-215-045	1 N 4148
D 741	8309-215-045	1 N 4148
D 743	8309-215-045	1 N 4148
D 746	8309-214-030	TD 190
D 761	8309-215-045	1 N 4148
D 763	8309-215-045	1 N 4148
D 766	8309-214-030	TD 190
D 781	8309-215-045	1 N 4148
D 783	8309-215-045	1 N 4148
D 786	8309-215-045	TD 190
D 804	8309-214-114	TD 129
D 807	8309-198-041	BAT 41
D 848	8309-214-114	TD 129
D 850	8309-214-010	TD 129
D 856	8309-214-010	TD 129
D 861	8309-214-010	TD 129
D 873	8309-214-010	TD 129
D 883	8309-214-114	TD 129
D 1201	8309-211-705	SFH 205 G



C 366	8415-166-150	2200uF/25 V	
C 378	8555-262-181	0,22 uF	(!)
C 380	8452-996-147	1000 uF/25 V	
C 411	8452-996-274	2200 uF/50 V	
C 414	8415-166-270	1000 uF/50 V	
C 433	8415-166-191	2200 uF/35 V	
C 462	8563-731-424	0,33 uF/160 V	
C 501	8563-731-612	0,01 uF/1500 V	(!)
C 510	8660-097-219	220 pF	(!)
C 511	8515-911-002	560 pF/1600 V	(!)
C 512	8525-033-487	8200 pF/400 V	(!)
C 513	8525-040-433	1,2 uF/100 V	(!)
C 513	8525-040-435	1 uF/100 V	
C 514	8650-090-477	270 pF/2 KV (C/D)	
C 517	8563-731-843	2,0 uF/250 V	
C 518	8515-721-237	0,33 uF/250 V	
C 519	8515-911-415	0,0155 uF/1600 V	
C 520	8515-911-433	0,033 uF/400 V	(!)
C 601	8599-990-025	0,15 uF/250 V	(!)
C 609	8563-732-425	0,1 uF/250 V	(!)
C 611	8660-097-234	1000 pF	(!)
C 613	8660-097-234	1000 pF	(!)
C 621	8650-090-510	1000 pF/1 KV	
C 622	8650-090-510	1000 pF/1 KV	
C 623	8650-090-510	1000 pF/1 KV	
C 624	8650-090-510	1000 pF/1 KV	
C 626	8443-306-055	220 uF/385 V	(!)
C 653	8525-003-941	4700 pF/63 V	(!)
C 664	8515-911-051	1000 pF/1200 V	(!)
C 667	8442-900-010	2,2 uF/450 V	
C 671	8650-090-510	1000 pF/1 KV	
C 691	8531-689-357	0,022 uF/100 V	
C 722	8563-731-655	0,15 uF/1000 V	(!)

Pos. No.	Fig. No.	Bestell-Nr. Part No.	Benennung Description Désignation Denominazione
Réf. Nr. d'ordinazioni			



R 333	8700-229-025	10 Ohm	(!)
R 337	8705-269-299	12 Kohm	
R 341	8700-252-017	4,7 Ohm	(!)
R 341	8730-049-020	6,2 Ohm	(!)
R 366	8700-007-409	2,2 Ohm	
R 367	8700-229-017	4,7 Ohm NB	(!)
R 378	8700-229-001	AX 0207-GA 1 Ohm NB	(!)
R 411	8700-252-017	AX 0414/ 4,7 Ohm NB	(!)
R 436	8790-047-109	100 Ohm	
R 464	8773-347-040	2,2 Kohm	
R 502	8700-007-521	100 Kohm	
R 513	8700-249-071	820 Ohm	(!)
R 514	8705-227-025	10 Ohm (C/D)	(!)
R 517	8701-118-017	4,7 Ohm	(!)
R 518	8705-227-239	39 Ohm	
R 521	8705-369-229	15 Ohm	
R 523	8730-018-977	1 W/0,1 Ohm	
R 536	8765-044-123	120 Kohm	(!)
R 536	8700-227-135	390 Kohm	(!)
R 537	8705-269-209	2,2 Ohm	(!)
R 537	8705-227-196	0,68 Ohm	(!)
R 543	8700-007-473	1 Kohm	(!)
R 554	8790-047-135	1 Kohm	
R 561	8790-047-164	100 Kohm	
R 563	8700-229-009	AX 0207-GA 2,2 Ohm NB	(!)
R 568	8700-007-449	100 Ohm	
R 573	8705-227-067	560 Ohm	
R 609	8311-200-010	DUO-PTC	(!)
R 621	8730-179-009	2,2 Ohm	(!)
R 623	8311-400-125	VDR VZA 275	(!)
R 624	8718-250-158	3,6 Mohm VDE	(!)
R 627	8718-250-014	4,7 Mohm VDE	
R 637	8796-101-135	1 Kohm	
R 641	8705-369-521	100 Kohm	
R 647	8700-221-029	15 Ohm	(!)
R 647	8700-007-429	8,2 Ohm	(!)
R 663	8730-019-156	1 W/0,47 Ohm	
R 664	8730-049-275	1,2 Kohm	
R 667	8705-279-115	56 Kohm	
R 671	8735-003-022	0,22 Ohm NB	(!)
R 681	8735-003-022	0,22 Ohm NB	(!)
R 683	8700-229-025	10 Ohm	
R 684	8700-007-463	390 Ohm	
R 691	8700-011-245	68 Ohm	(!)
R 704	8705-269-020	6,2 Ohm	(!)
R 721	8700-051-073	100 Kohm	(!)
R 724	8797-215-674	470 Kohm	
R 726	8766-357-137	470 Kohm	(!)
R 734	8705-329-113	47 Kohm	
R 741	8705-369-103	18 Kohm	
R 742	8700-201-069	680 Kohm	(!)
R 751	8790-047-135	SK 10 1 Kohm	
R 754	8705-329-113	47 Kohm	
R 761	8705-369-103	18 Kohm	
R 762	8700-201-069	680 Kohm	(!)
R 771	8790-047-135	SK 10 1 Kohm	

Pos. No.	Fig. No.	Bestell-Nr. Part No.
Réf. Nr.		

R 774
R 781
R 782
R 801
R 802



Si 601
Si 624

Rauteill
(!) Hinweis
Bauelement
nur Teil
Notes on
Component
with the
(!) note
Component
sostituire

Pos. Fig. Bestell-Nr. No. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione	Pos. Fig. Bestell-Nr. No. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione
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R 774	8705-329-113	47 Kohm
R 781	8705-369-103	18 Kohm
R 782	8700-201-069	680 Kohm (!)
R 801	8766-357-169	10 Mohm
R 802	8766-357-169	10 Mohm

MOS = Vorschriften beachten
Observe MOS precautions
Attenzione alle norme MOS



Si 601	8315-617-006	2,5 A/T (!)
Si 624	8315-616-003	800 mA/T (!)

Bauteilhinweis

(!) Hinweis:

Bauelemente nach VDE-bzw. IEC-Richtlinien. Im Ersatzfall nur Teile mit gleicher Spezifikation verwenden!

Notes on components (!) Cautions

Components to VDE or IEC guidelines. Only use components with the same specification for replacement!

(!) nota:

Componenti secondo le norme VDE risp. te iec. in caso di sostituzione impiegare solo componenti con le stesse caratteristiche!

Serviceanleitung
Service manual
manuale di servizio