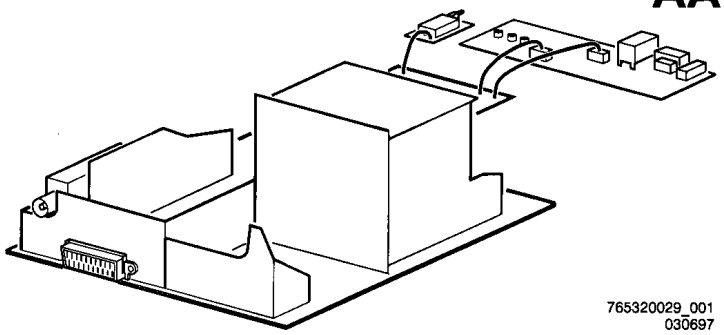
Service
Service
Service

L6.2
AA



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Service Manual

Contents

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GB 4822 727 21529

PCS 91 372 GB

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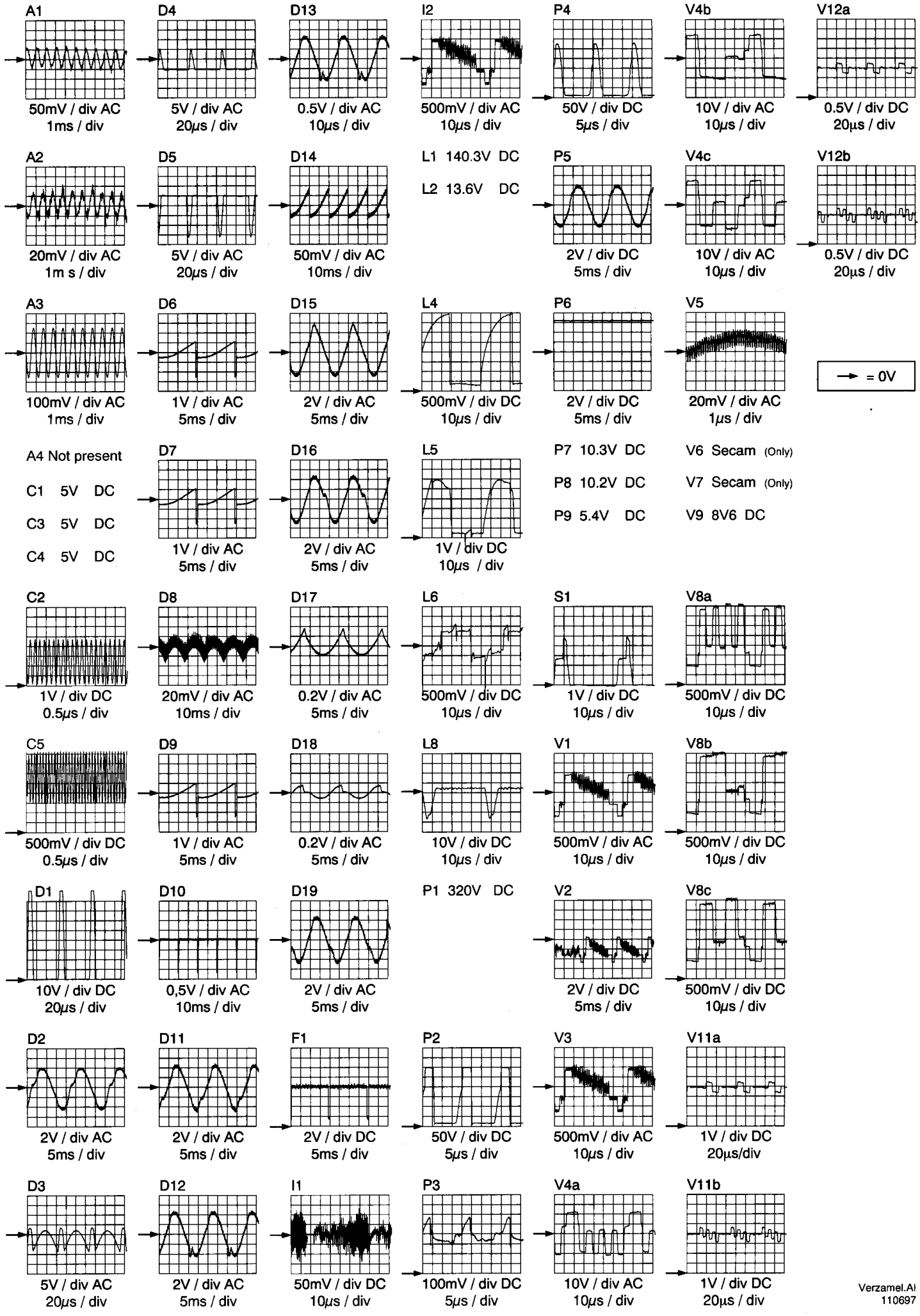

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Survey of testpoints / Übersicht über die Teststellen / Presentation des points à tester

MAIN CARRIER (Component side)

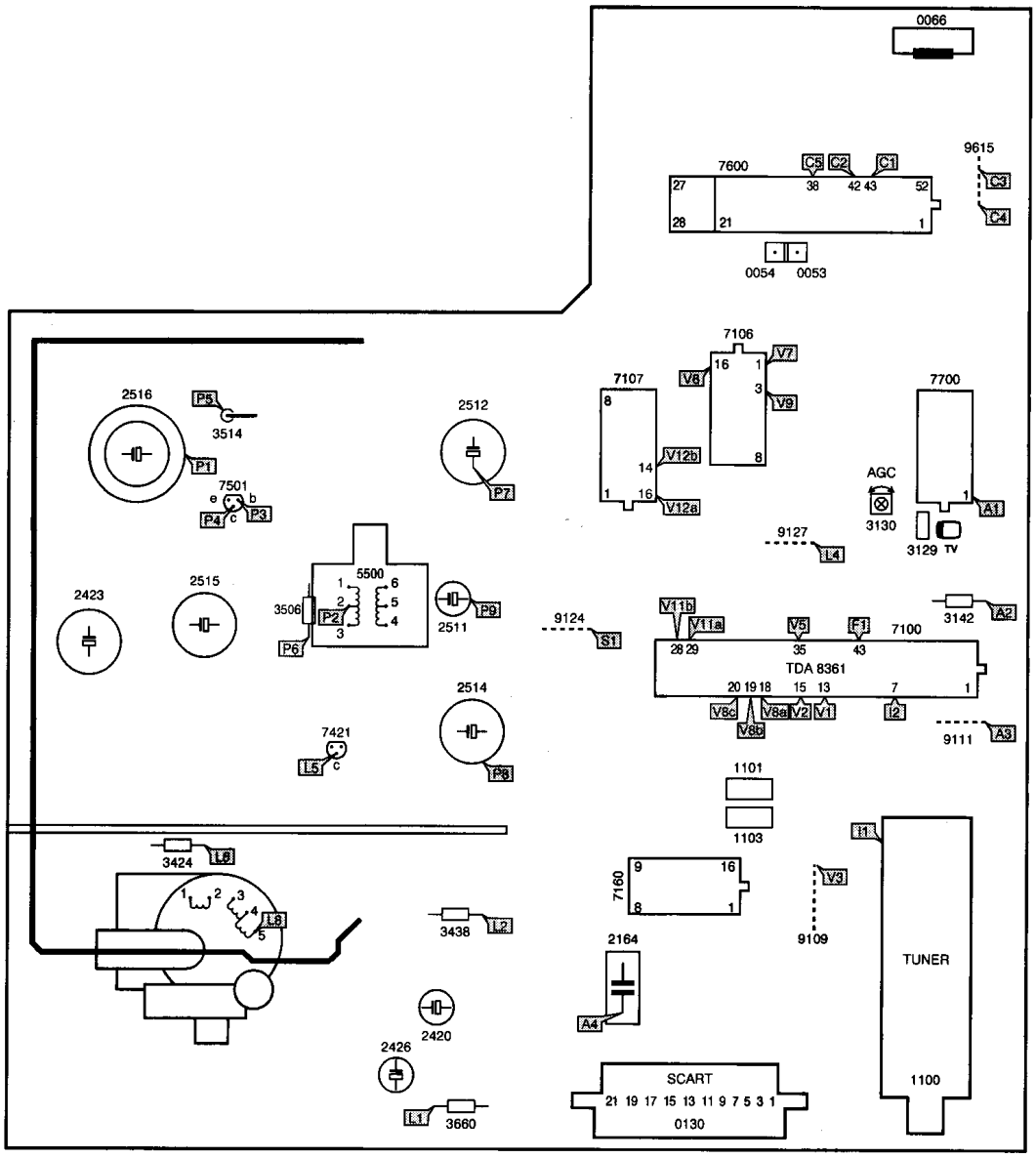

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Fig. 5.1

CRT PANEL

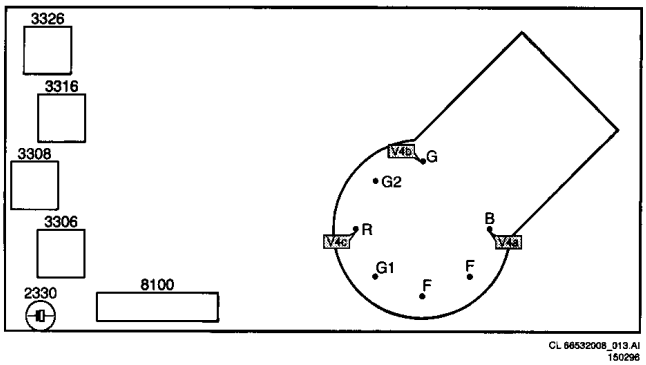

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Fig. 5.2

DEFLECTION MODULE 110°

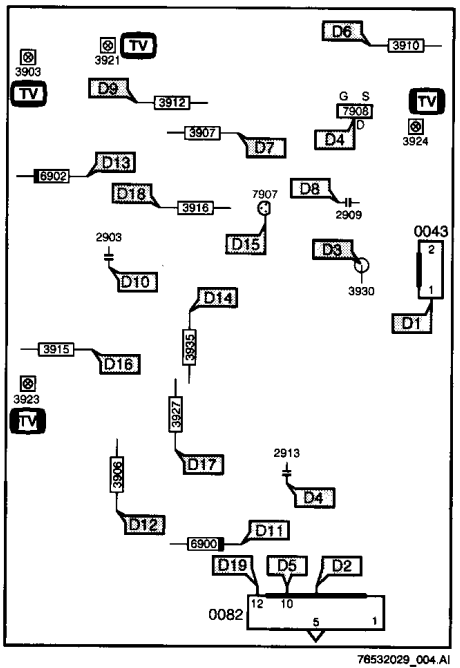

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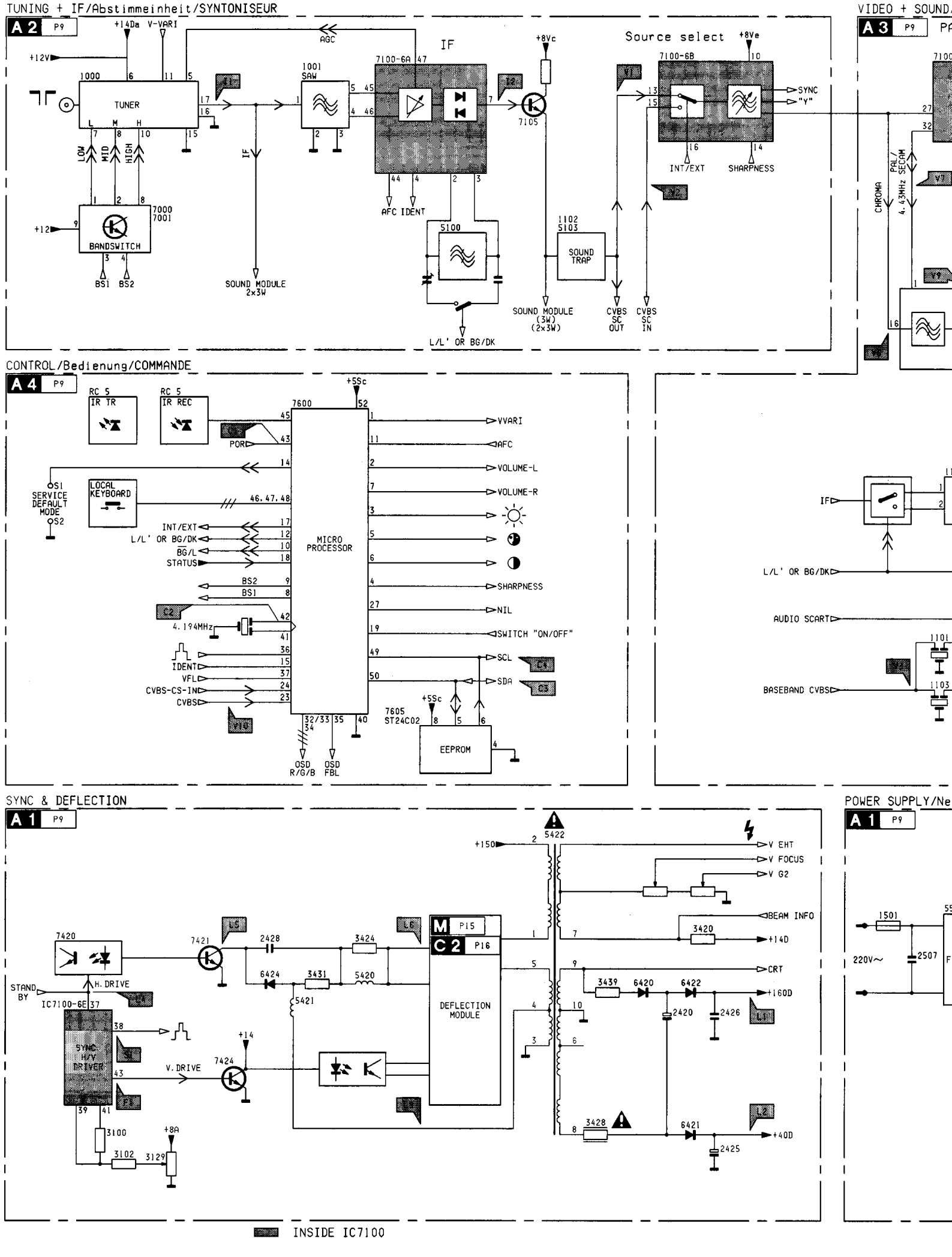
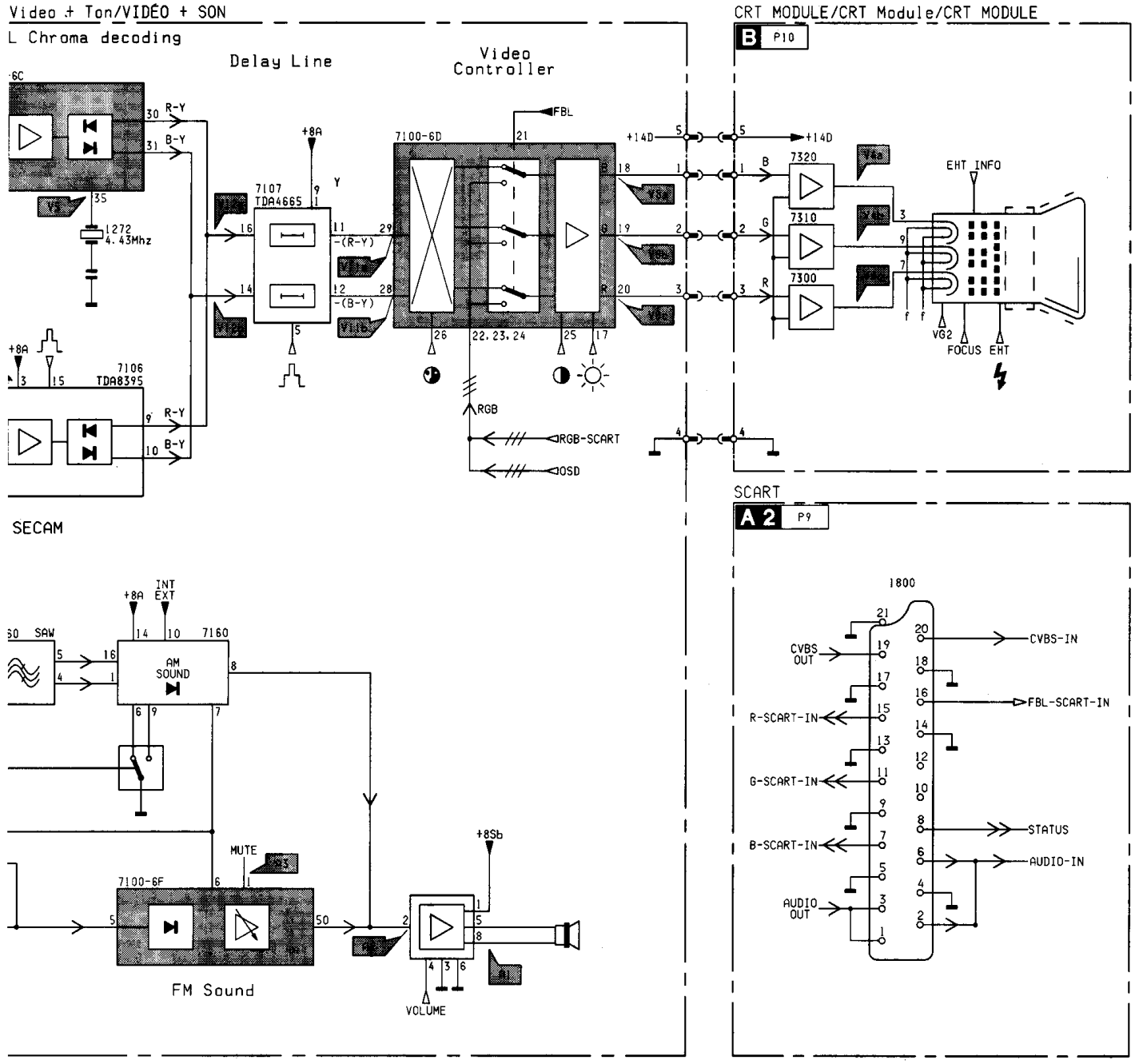
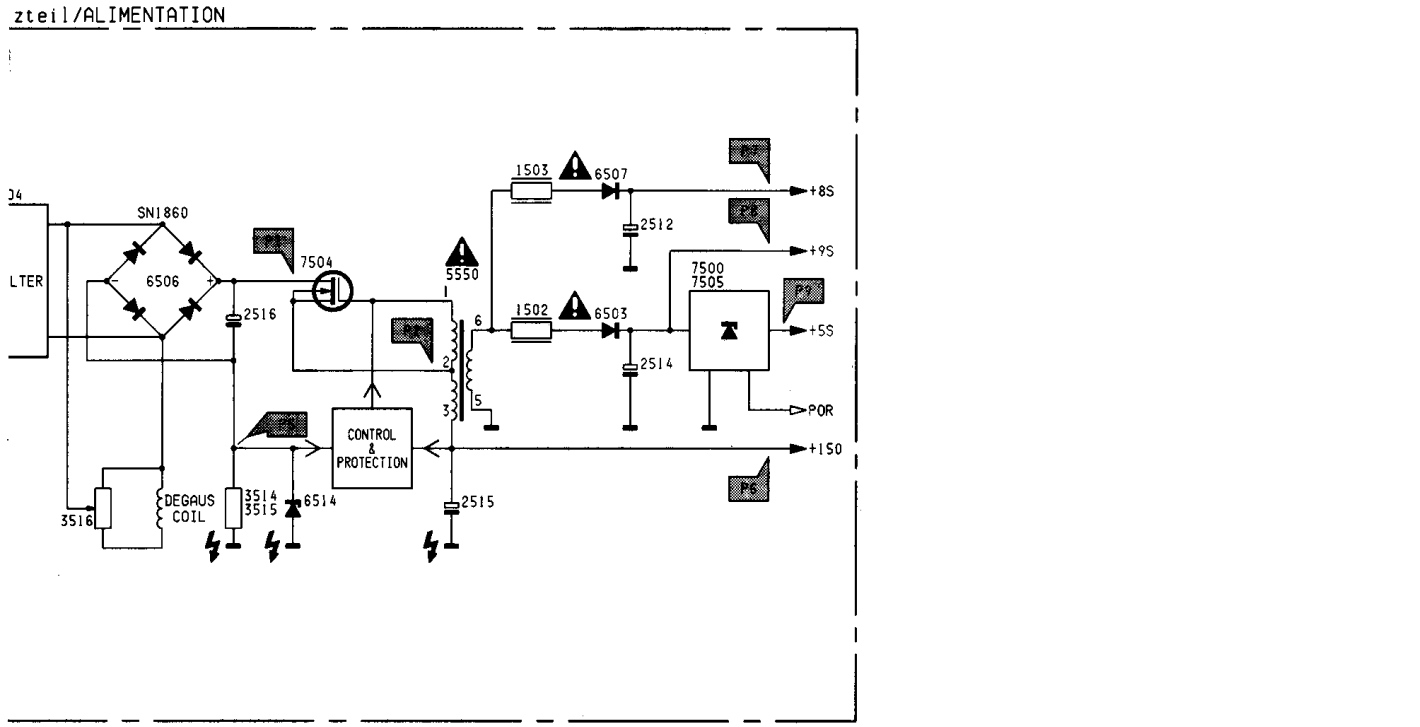
Fig. 5.3

Block diagram / Blockschaltbild / Schéma-bloc







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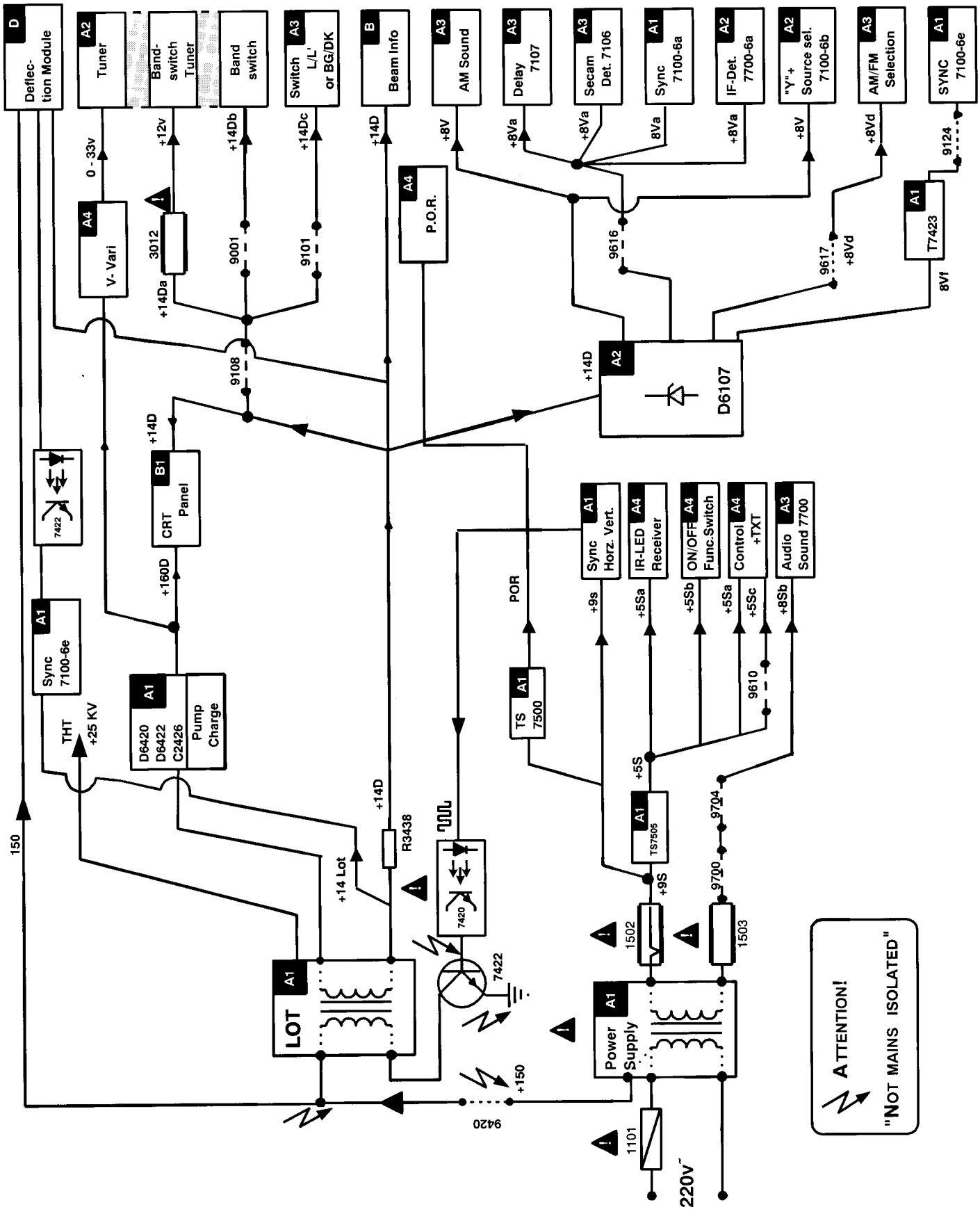
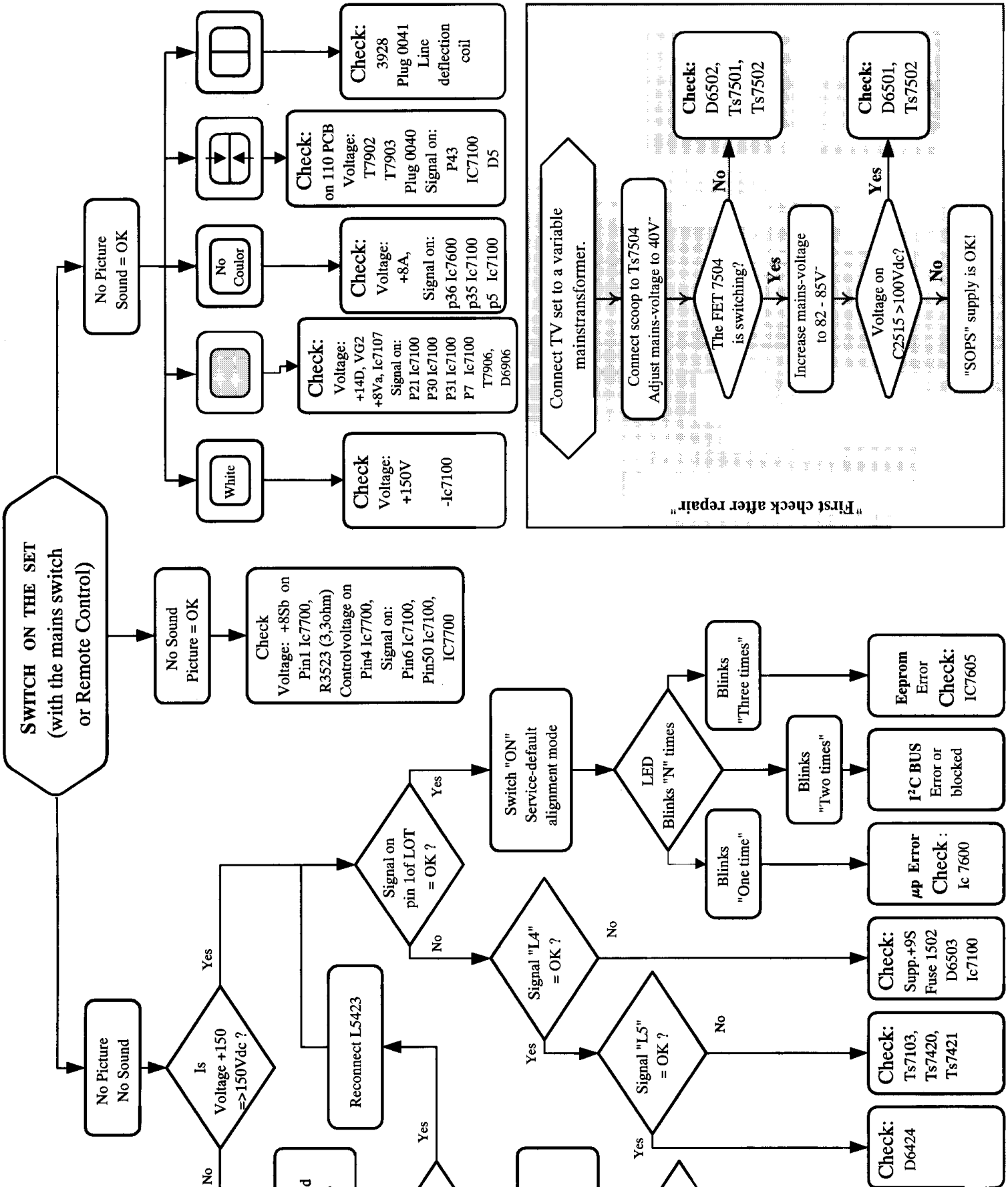
Block diagram Supply voltages / Blockschaltbild Speisung / Schéma-bloc du alimentation



Fault finding tree & Repair facilities /
Fehlersuchbaum & Reparaturhinweise /
Aide au depannage & Conseils pour la réparations



6. Repair facilities

1. Functional blocks

On both the service printing on the copper and the component side, functional blocks are indicated by lines and text.

2. Test points

The L6 chassis is equipped with test points in the service printing on both sides of mono-board. These test points are referring to the functional blocks as mentioned above:

* P1-P2-P3, etc: Test points for the power supply
* L1-L2-L3, etc: Test points for the line drive and line output circuitry
* F1-F2-F3, etc: Test points for the frame drive and frame output circuitry
* S1-S2-S3, etc: Test points for the synchronisation circuitry
* V1-V2-V3, etc: Test points for the video processing circuitry
* A1-A2-A3, etc: Test points for the audio processing circuitry
* C1-C2-C3, etc: Test points for the control circuitry
* T1-T2-T3, etc: Test points for the teletext processing circuitry

The numbering is done in a for diagnostics logical sequence; always start diagnosing within a functional block, in the sequence of the relevant test points, for that functional block.

3. Service default-alignment mode (SDAM)

The service default-alignment mode is a pre-defined mode which can be used for faultfinding (especially when the TV gives no picture at all). All oscillograms and DC voltages in this service manual are measured in the service default-alignment mode.

Activate the service default-alignment mode can be done in 2 ways:
1. By short-circuiting the service pins S1 and S2 of the microcomputer (pin 14 of IC7600).
2. From normal operation mode by pressing the button "DEFAULT" or "ALIGN" on the DST (Dealer Service Tool) RC7150.

Leaving the service default-alignment mode to normal operation can only be done by the stand-by on the remote control or by pressing diagnose 99 followed by the OK-button on the DST (so not via mains switch "off"; after mains switch "off" and then "on" again the set will start up in the service default-alignment mode again to enable easy faultfinding).

Functions of the service default-alignment mode:
1. All analogue settings (volume, contrast, brightness and saturation) are in the mid position.
2. Set is tuned to program number 1
3. Delta volume settings are not used (delta volume setting = a delta on the volume setting)
4. OSD error message (present available error code) is displayed continuously
5. The OSD-key will act as search and auto store on the maximum program number.
6. Automatic switch off function (set switches "off" after 15 minutes no IDENT) will be switched off
7. Hotel mode will be disabled
8. All other functions remain normal controllable

Service default-alignment menu:
New option settings are activated immediately.

1. Software version of the microprocessor used in that typical set is displayed in the right top corner
2. A counter in the middle of the screen indicate the normal operation hours of the set in a hexadecimal code (every time the set is switched "on" the counter is incremented by 1 hour, so +1 at the counter).
3. The "S" in the middle of the screen next to the counter indicate that the set is in the service default-alignment mode
4. Option code
   This code indicates the Options setting of the set.
5. Error code history:
   The 5 last different error codes occurred are stored in the EEPROM memory; last error code detected will be displayed on the left side (see for an overview of all possible error codes Fig. 6.3), so e.g.:

0 0 0 0 0	means no error codes present in the buffer
3 0 0 0 0	means one error code present in the buffer; error code 3
2 3 0 0 0	means two error codes present in the buffer; last detected error code is error code 2, previous detected error code is error code 3

The error code history buffer is cleared when the Service Menu is left by the stand-by command or by diagnose 99 command. In case the Service Menu is left by the mains switch "off" the error code history buffer will not be cleared.

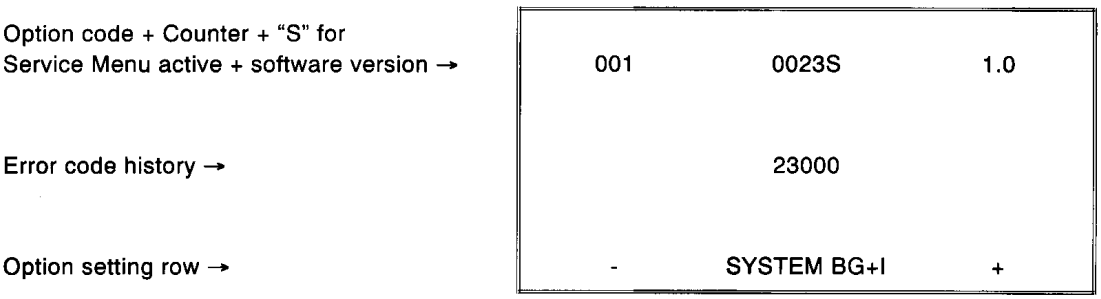


Fig. 6.1

6. Option setting:
In the bottom line the options are given.
Control of the options is with the following keys on the remote control:

* PROGRAM +/- Select the option to be changed:
Via the "PROGRAM +/-" button the option to be changed can be selected. The selected option is implemented immediately.

* CONTROL up/down Changes the setting of the option.

* MENU +/- Changes to a submenu: via "MENU +/-" buttons a submenu is selected in which in a stereo version the sound/sync alignment can be done.

The options are stored immediately in the EEPROM. The following table indicates the possible hardware and software options and their technical consequences:

Text displayed in the option row in the Service Menu		The technical consequence for the selected option
SINGLE	—>	For a PAL BG only or PAL BG/SECAM BGDK set
SYSTEM I:UK	—>	For a PAL I only set
SYSTEM BG+LL'	—>	For a PAL BG/SECAM LL' set
SYSTEM BG+DK	—>	For a PAL BGI/SECAM LL' set
NATIONAL BRAND MAxxxxx—>		Selects MENU-Layout National Brand styling

Fig. 6.2

4. Error messages

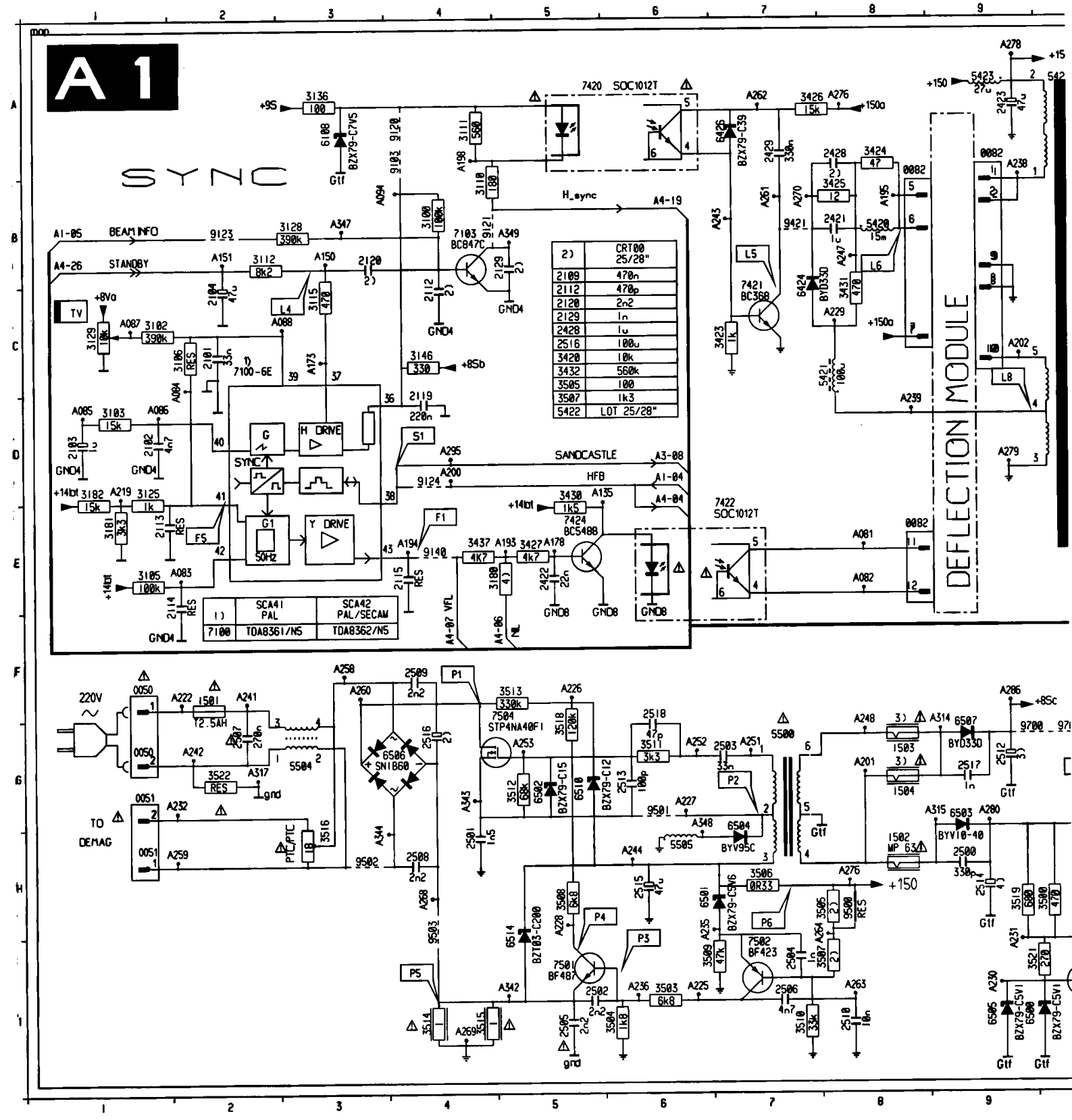
The microcomputer also detects errors in circuits connected to the I^2C (Inter IC) bus. These error messages are communicated via OSD (On Screen Display) and a flashing LED in the service default-alignment mode. (error code history buffer):

1. In normal operation:
In normal operation no errors are indicated.
2. In the service default-alignment mode:
In the service default-alignment mode both the "OSD error **message**" and the "LED error" indication will display the present detected error continuously.

"OSD error number" (Service Menu)	"LED behaviour"	Error description	Possible defective component
0	No blinking LED	No error	—
1	LED blinks once	μC error	IC76002
2	LED blinks twice	General I^2C	I^2C bus is blocked
3	LED blinks three times	EEPROM error	IC7605

Fig. 6.3

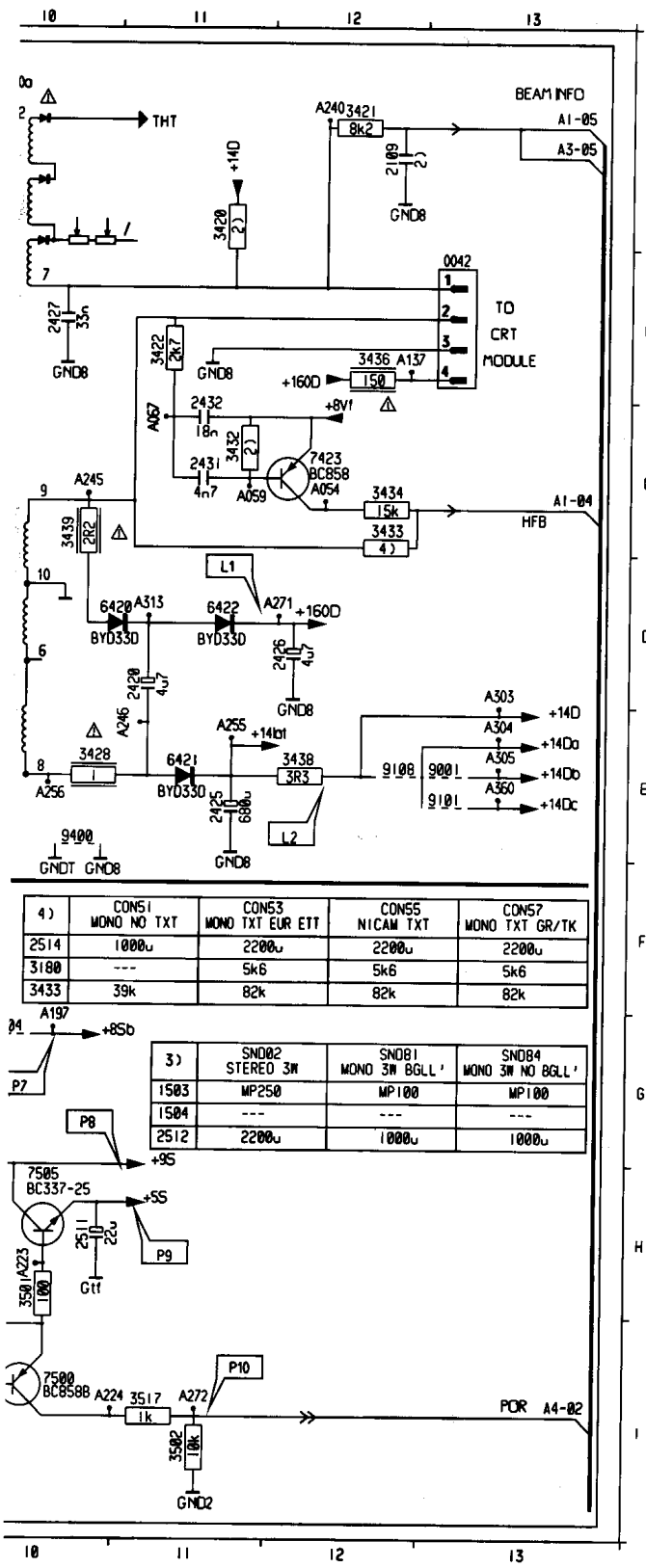
Power supply & Line stage / Netzteil & Ablenkstufe / Chassis L6.2 9



2)	CRT00 25/28"
2109	470n
2112	470p
2120	2n2
2129	1n
2428	1u
2516	100u
3420	10k
3432	560k
3505	100
3507	1k3
5422	LOT 25/28"

1)	SCA41 PAL	SCA42 PAL/SECAM
7100	TDA8361/N5	TDA8362/N5

Module secteur & Étage de lignes

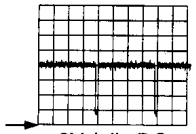


4)	CON51 MONO NO TXT	CON53 MONO TXT EUR ETT	CON55 NICAM TXT	CON57 MONO TXT GR/TK
2514	1000u	2200u	2200u	2200u
3180	---	5k6	5k6	5k6
3433	39k	82k	82k	82k

3)	SND02 STEREO 3W	SND81 MONO 3W BGLL'	SND84 MONO 3W NO BGLL'
1503	MP250	MP100	MP100
1504	---	---	---
2512	2200u	1000u	1000u

	0042	B13	3506	H 7	A228	H 5									
	0042	B13	3507	I 8	A229	C 8									
	0042	B13	3508	H 5	A230	I 9									
	0042	B13	3509	I 6	A231	I 9									
	0050	F I	3510	I 7	A232	G 2									
	0050	G I	3511	G 6	A235	H 6									
	0051	H I	3512	G 5	A236	I 6									
A	0051	G I	3513	F 5	A238	A 9									
	0082	A 9	3514	I 4	A239	D 8									
	0082	A 9	3515	I 4	A240	AI2									
	0082	A 8	3516	H 3	A241	F 2									
	0082	A 8	3517	III	A242	G 2									
	0082	A 8	3518	G 5	A243	B 7									
	0082	A 9	3519	H 9	A244	H 6									
	0082	A 9	3521	I 9	A245	C10									
	0082	A 9	3522	G 2	A246	EII									
	0082	E 8	5420	B 8	A247	B 8									
	0082	E 8	5421	C 8	A248	G 8									
	1501	F 2	5422	A10	A251	G 7									
	1502	H 8	5423	A 9	A252	G 6									
B	1503	G 8	5500	G 7	A253	G 5									
	1504	G 8	5504	G 3	A255	EII									
	2101	C 2	5505	H 6	A256	E10									
	2102	DII	6108	A 3	A258	F 3									
	2103	DI	6420	D10	A259	H 2									
	2104	C 2	6421	EII	A260	F 3									
	2109	AI2	6422	DII	A261	B 7									
	2112	C 4	6424	C 7	A262	A 7									
	2113	E I	6426	A 7	A263	I 8									
	2114	E 2	6500	I 9	A264	H 7									
	2115	E 4	6501	H 6	A268	H 4									
C	2119	D 4	6502	G 5	A269	I 4									
	2120	B 3	6503	G 9	A270	B 7									
	2129	B 5	6504	H 7	A271	DI2									
	2420	DII	6505	I 9	A272	III									
	2421	B 8	6506	G 4	A276	A 8									
	2422	E 5	6507	G 9	A276	H 8									
	2423	A 9	6510	G 5	A278	A 9									
	2425	EII	6514	H 5	A279	D 9									
	2426	DI2	7100	C 2	A280	G 9									
	2427	BI0	7103	B 4	A286	F 9									
D	2428	A 8	7420	A 6	A295	D 4									
	2429	A 7	7421	C 7	A3-05	AI3									
	2431	CII	7422	E 7	A3-08	D 6									
	2432	CII	7423	CI2	A303	DI3									
	2500	H 9	7424	E 5	A304	EI3									
	2501	H 4	7500	I10	A305	EI3									
	2502	I 5	7501	I 5	A313	DII									
	2503	G 7	7502	I 7	A314	G 9									
	2504	I 7	7504	F 5	A315	G 9									
	2505	I 5	7505	H10	A317	G 2									
	2506	I 7	9001	EI3	A342	I 5									
E	2507	G 2	9101	EI3	A343	G 4									
	2508	H 4	9103	A 4	A344	H 3									
	2509	F 4	9108	EI2	A347	B 3									
	2510	I 8	9120	A 4	A348	G 6									
	2511	HI0	9121	B 4	A349	B 5									
	2512	G 9	9123	B 2	A360	EI3									
	2513	G 6	9124	D 4	A4-02	II3									
	2514	H 9	9140	E 4	A4-04	D 6									
	2515	H 6	9400	EI0	A4-06	F 5									
	2516	G 4	9421	B 7	A4-07	F 4									
	2517	G 9	9500	H 8	A4-19	B 6									
F	2518	F 6	9501	G 6	A4-26	B I									
	3100	B 4	9502	H 3											
	3102	C I	9503	H 4											
	3103	D I	9700	G 9											
	3105	E I	9704	GI0											
	3106	C 2	A054	CI2											
	3110	B 4	A059	CII											
	3111	A 4	A067	CII											
	3112	B 2	A081	E 8											
	3115	C 3	A082	E 8											
G	3125	D I	A083	E 2											
	3128	B 3	A084	C 2											
	3129	C I	A085	D I											
	3136	A 3	A086	D I											
	3146	C 4	A087	C I											
	3180	E 5	A088	C 3											
	3181	E I	A094	B 3											
	3182	D I	AI-04	D 6											
	3420	AII	AI-04	CI3											
	3421	AI2	AI-05	B I											
	3422	BII	AI-05	AI3											
H	3423	C 7	AI35	D 5											
	3424	A 8	AI37	BI2											
	3425	B 8	AI50	B 3											
	3426	A 7	AI51	B 2											
	3427	E 5	AI73	C 3											
	3428	EI0	AI78	E 5											
	3430	D 5	AI93	E 5											
	3431	C 8	AI94	E 4											
	3432	CII	AI95	B 8											
	3433	CI2	AI97	GI0											
	3434	CI2	AI98	A 4											
	3436	BI2	A200	D 4											
	3437	E 4	A201	G 8											
I	3438	EI2	A202	C 9											
	3439	CI0	A219	D I											
	3500	HI0	A222	F 2											
	3501	HI0	A223	HI0											
	3502	III	A224	II0											
	3503	I 6	A225	I 6											
	3504	I 6	A226	F 5											
	3505	H 8	A227	G 6											

F1



2V / div DC
5ms / div

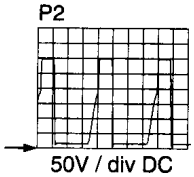
P1 320V DC

L1 140.3V DC

L2 13.6V DC

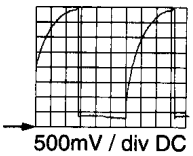
L3 39V DC

P2



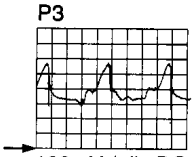
50V / div DC
5µs / div

L4



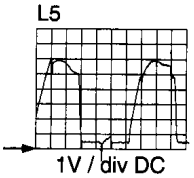
500mV / div DC
10µs / div

P3



100mV / div DC
5µs / div

L5

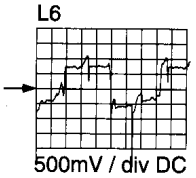


1V / div DC
10µs / div

P4

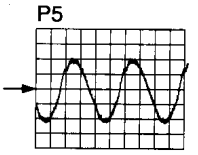
50V / div DC
5µs / div

L6



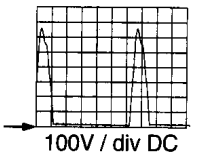
500mV / div DC
10µs / div

P5



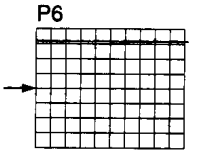
2V / div DC
5ms / div

L7



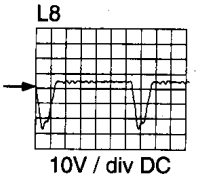
100V / div DC
10µs / div

P6



2V / div DC
5ms / div

L8



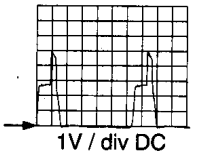
10V / div DC
10µs / div

P7 10.3V DC

P8 10.2V DC

P9 5.4V DC

S1



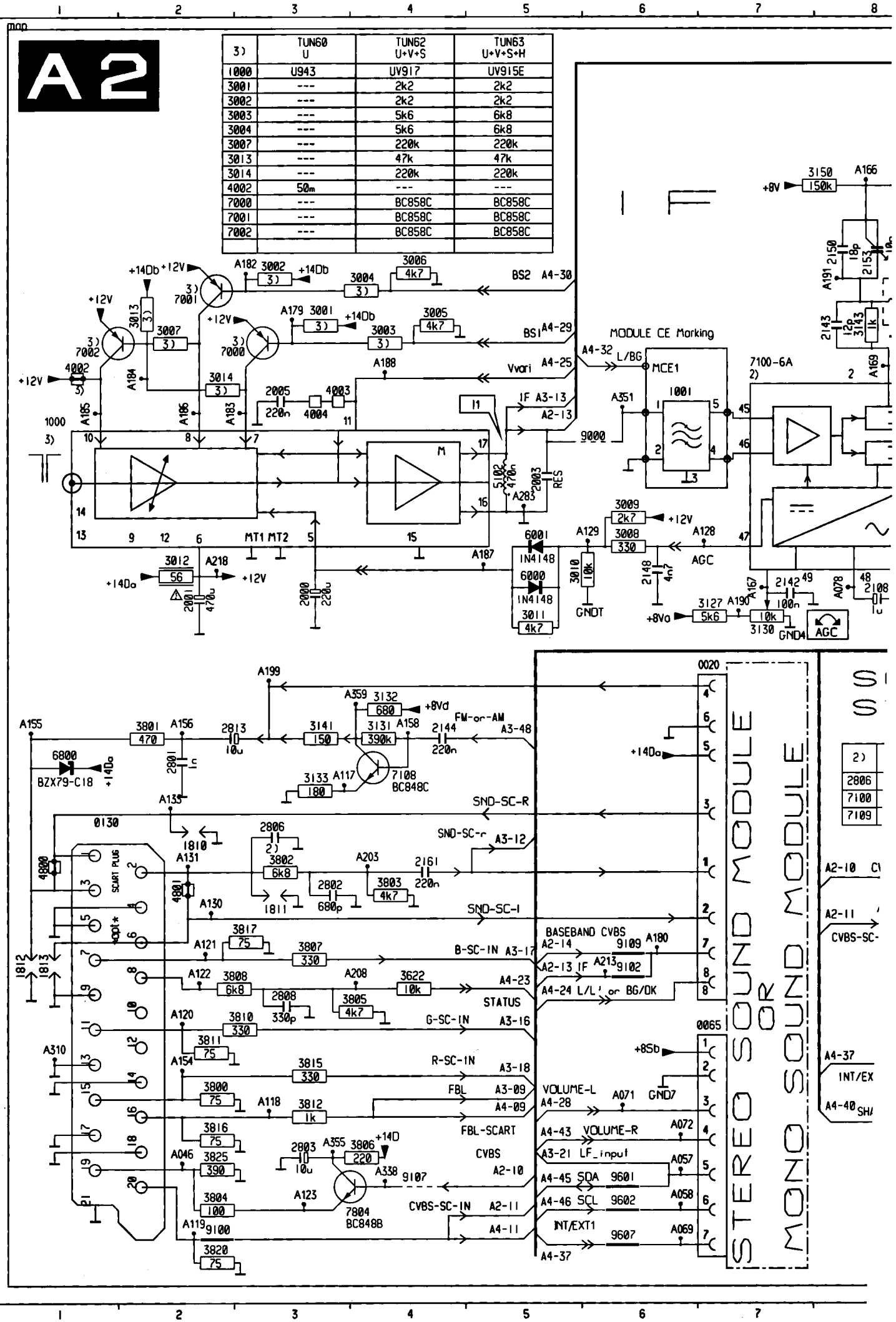
1V / div DC
10µs / div

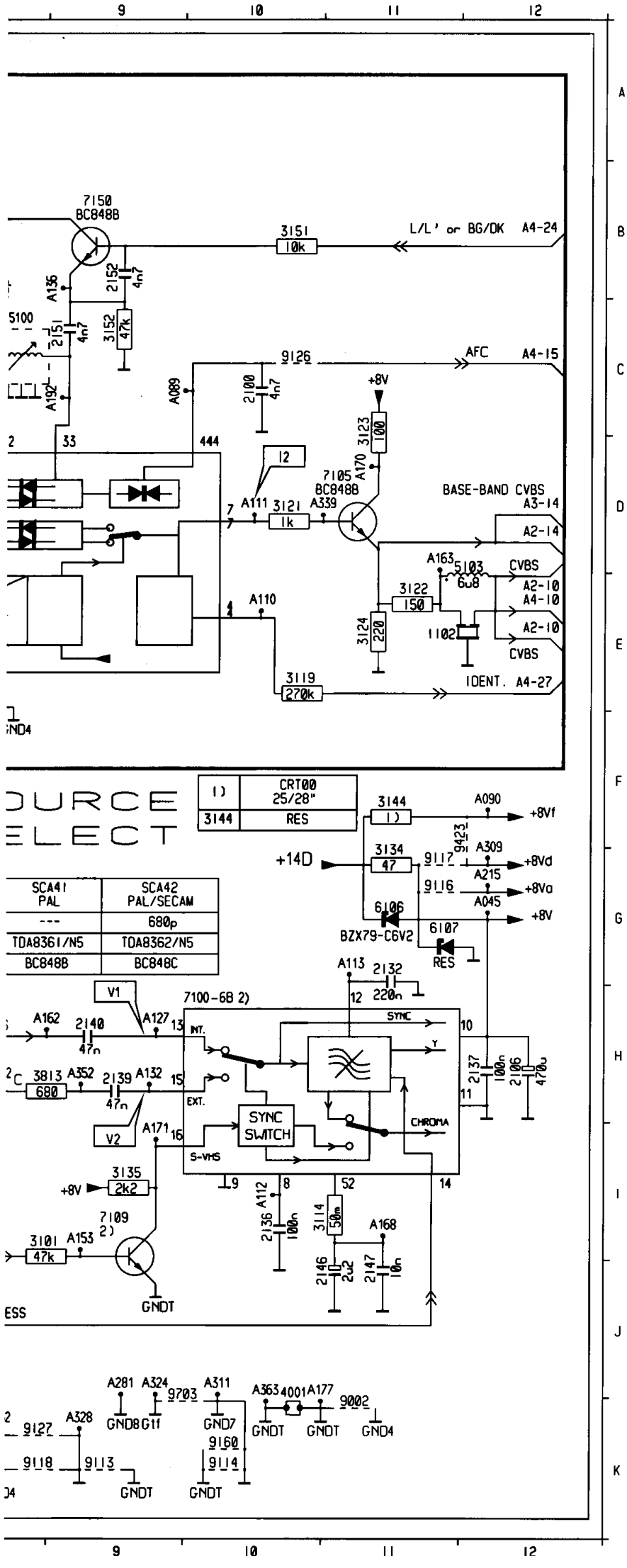
→ = 0V

OSC_A1.AI

A2

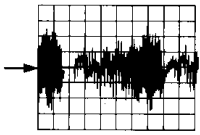
3)	TUN60 U	TUN62 U+V+S	TUN63 U+V+S+H
1000	U943	UV917	UV915E
3001	---	2k2	2k2
3002	---	2k2	2k2
3003	---	5k6	6k8
3004	---	5k6	6k8
3007	---	220k	220k
3013	---	47k	47k
3014	---	220k	220k
4002	50m	---	---
7000	---	BC858C	BC858C
7001	---	BC858C	BC858C
7002	---	BC858C	BC858C





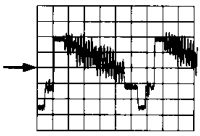
	0020	F 6	7100	H 9	A352 H 9
	0020	F 6	7100	C 7	A355 J 3
	0020	F 6	7105	D10	A359 F 4
	0020	F 6	7108	G 4	A362 K 8
	0020	F 6	7109	I 9	A363 J10
A	0020	F 6	7150	B 9	A4-09 J 5
	0020	F 6	7804	K 4	A4-10 E12
	0020	F 6	9000	D 6	A4-11 K 5
	0065	I 6	9002	K11	A4-15 C12
	0065	I 6	9100	K 2	A4-23 I 5
	0130	G 1	9102	I 6	A4-24 I 5
	1000	D 1	9107	J 4	A4-24 B12
	1001	D 6	9109	H 6	A4-25 C 5
	1102	E11	9113	K 9	A4-27 E12
	1810	H 2	9114	K10	A4-28 J 5
	1811	H 3	9116	G11	A4-29 C 5
B	1812	I 1	9117	G11	A4-30 C 5
	1813	I 1	9118	K 8	A4-32 C 6
	2000	E 3	9126	C10	A4-37 K 5
	2001	E 2	9127	K 8	A4-37 I 8
	2003	D 5	9160	K10	A4-40 J 8
	2005	D 3	9423	F12	A4-43 J 5
	2100	C10	9601	J 6	A4-45 J 5
	2106	H12	9602	K 6	A4-46 K 5
	2108	E 8	9607	K 6	MCE1 D 6
	2132	G11	9703	K 9	
	2136	I10	A045	G12	
C	2137	H12	A046	J 2	
	2139	H 9	A057	J 6	
	2140	H 9	A058	K 6	
	2142	E 7	A069	K 6	
	2143	C 8	A071	J 6	
	2144	G 4	A072	J 6	
	2146	J11	A078	E 8	
	2147	J11	A089	C 9	
	2148	E 6	A090	F12	
	2150	B 8	A110	E10	
D	2151	C 9	A111	D10	
	2152	B 9	A112	I10	
	2153	C 8	A113	G11	
	2161	H 4	A117	G 3	
	2801	G 2	A118	J 3	
	2802	H 3	A119	K 2	
	2803	J 3	A120	I 2	
	2806	G 3	A121	H 2	
	2808	I 3	A122	I 2	
	2813	G 2	A123	K 3	
	3001	C 3	A127	H 9	
E	3002	C 3	A128	E 7	
	3003	C 4	A129	E 6	
	3004	C 4	A130	H 2	
	3005	C 4	A131	H 2	
	3006	C 4	A132	H 9	
	3007	C 2	A133	G 2	
	3008	E 6	A136	B 9	
	3009	E 6	A153	I 9	
	3010	E 5	A154	I 2	
	3011	F 5	A155	G 1	
F	3012	E 2	A156	G 2	
	3013	C 2	A158	G 4	
	3014	D 2	A162	H 8	
	3101	I 8	A163	D11	
	3114	I11	A166	B 8	
	3119	E10	A167	E 7	
	3121	D10	A168	I11	
	3122	E11	A169	C 8	
	3123	C11	A170	D11	
	3124	E11	A171	I 9	
	3127	F 7	A177	J10	
G	3130	F 7	A179	C 3	
	3131	G 4	A180	H 6	
	3132	F 4	A182	C 3	
	3133	G 3	A183	D 2	
	3134	G11	A184	D 2	
	3135	I 9	A185	D 1	
	3141	G 3	A186	D 2	
	3143	C 8	A187	E 5	
	3144	F11	A188	C 4	
	3150	B 8	A190	F 7	
	3151	B10	A191	C 8	
H	3152	C 9	A192	C 9	
	3622	I 4	A199	F 3	
	3800	J 2	A2-10	E12	
	3801	G 2	A2-10	J 5	
	3802	H 3	A2-10	E12	
	3803	H 4	A2-10	H 8	
	3804	K 2	A2-11	K 5	
	3805	I 4	A2-11	H 8	
	3806	J 4	A2-13	I 5	
	3807	H 3	A2-13	D 5	
I	3808	I 3	A2-14	H 5	
	3810	I 3	A2-14	D12	
	3811	I 2	A203	H 4	
	3812	J 3	A208	I 4	
	3813	H 9	A212	H 8	
	3815	I 3	A213	I 6	
	3816	J 2	A215	G12	
	3817	H 3	A218	E 2	
	3820	K 2	A281	J 9	
	3825	J 2	A283	E 5	
	4001	J10	A3-09	J 5	
J	4002	D 1	A3-12	H 5	
	4003	D 3	A3-13	D 5	
	4004	D 3	A3-14	D12	
	4800	H 1	A3-16	I 5	
	4801	H 2	A3-17	H 5	
	5100	C 8	A3-18	I 5	
	5102	D 5	A3-21	J 5	
	5103	D12	A3-48	G 5	
	6000	E 5	A309	G12	
	6001	E 5	A310	I 1	
	6106	G11	A311	J10	
K	6107	G11	A324	J 9	
	6800	G 1	A328	K 9	
	7000	C 3	A338	J 4	
	7001	C 2	A339	D10	
	7002	C 1	A351	D 6	

I1



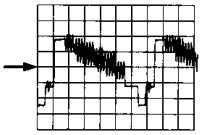
50mV / div DC
10µs / div

I2



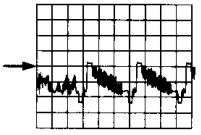
500mV / div AC
10µs / div

V1



500mV / div AC
10µs / div

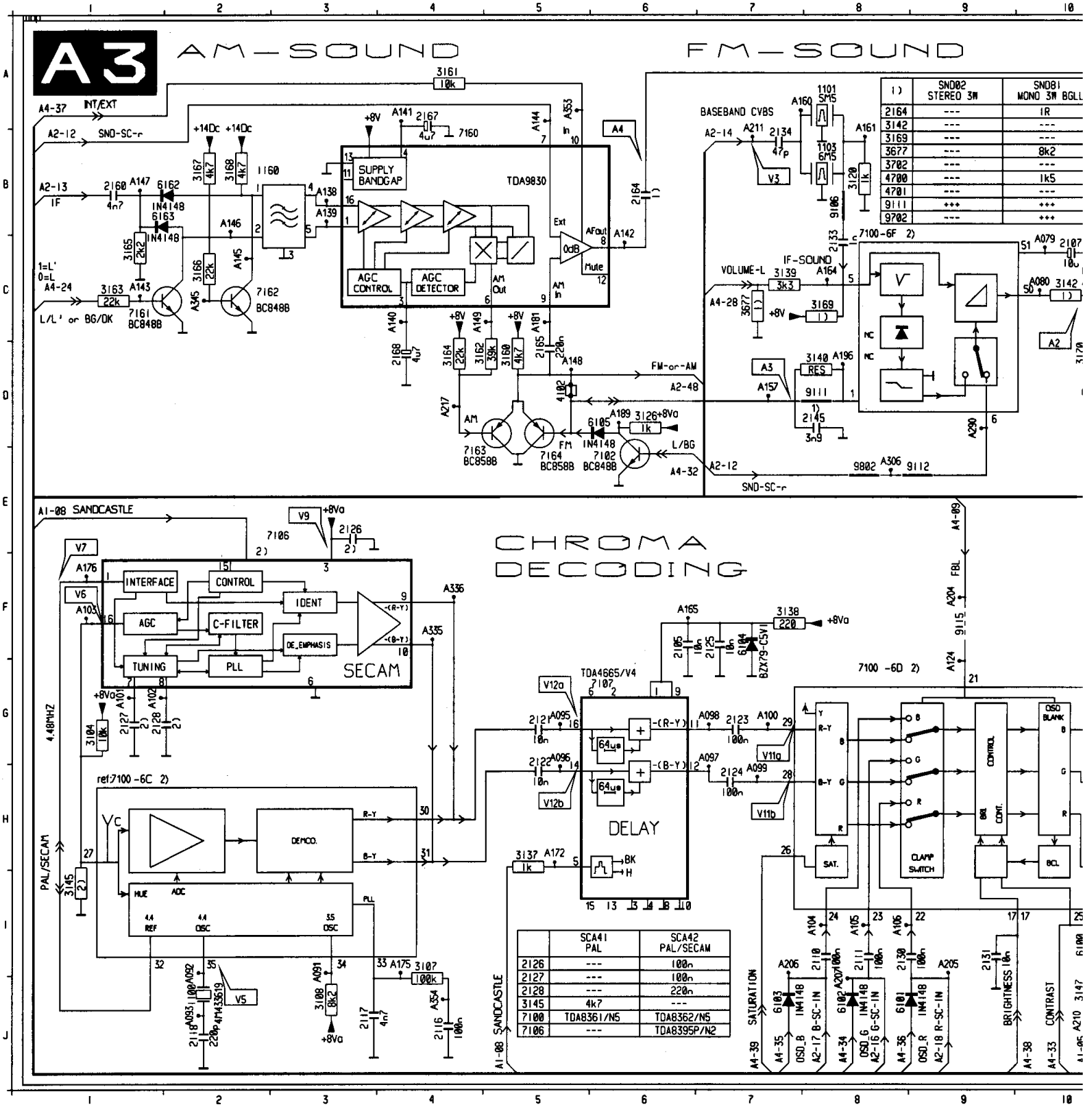
V2



2V / div DC
5ms / div

OSC_A2.AI

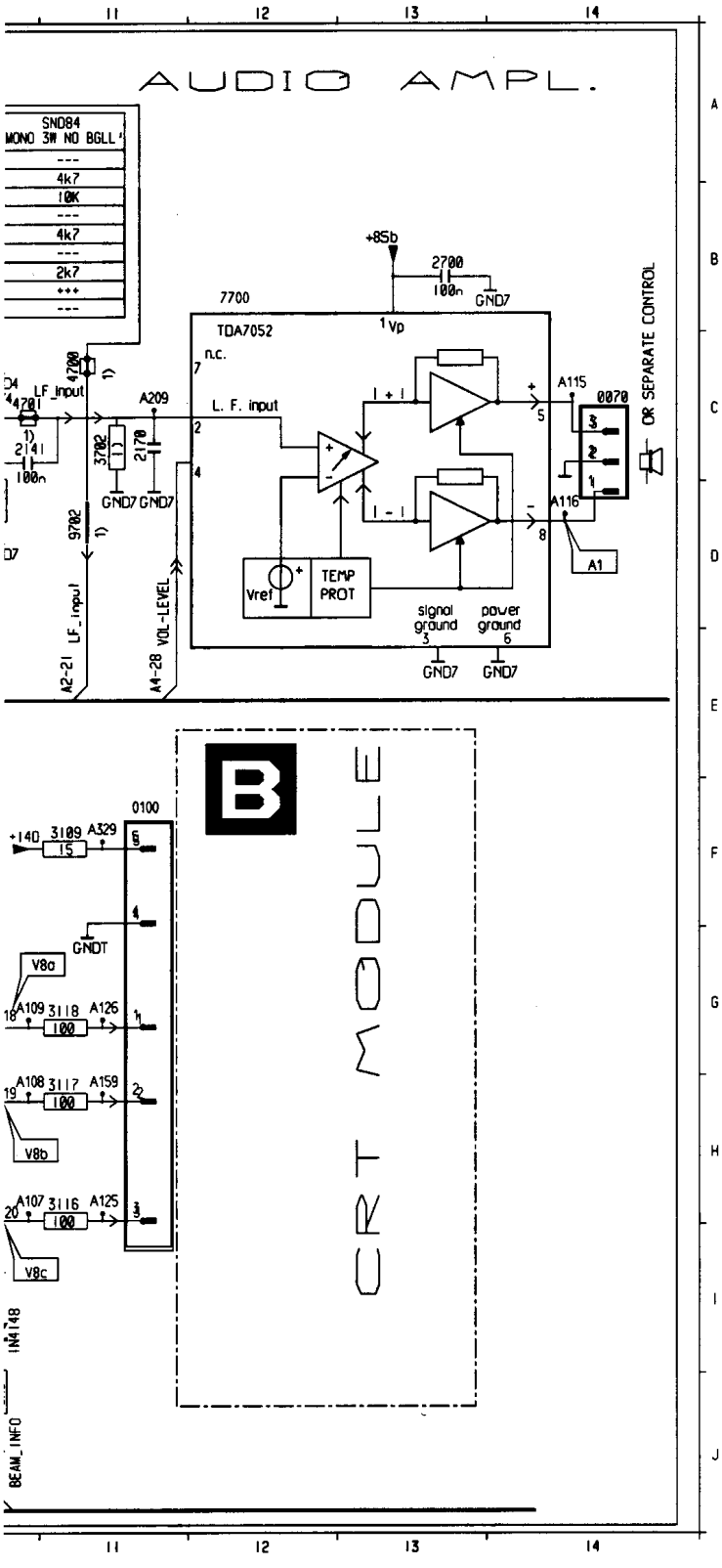
Sound & Chroma / Ton & Chroma /

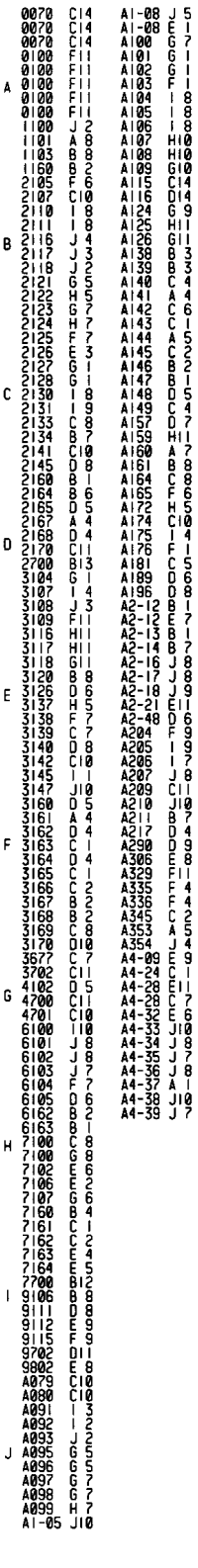


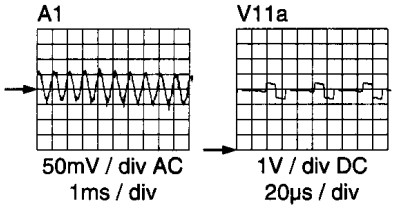
	SCA41 PAL	SCA42 PAL/SECAM
2126	---	100n
2127	---	100n
2128	---	220n
3145	4k7	---
7100	TDA8361/N5	TDA8362/N5
7106	---	TDA8395P/N2

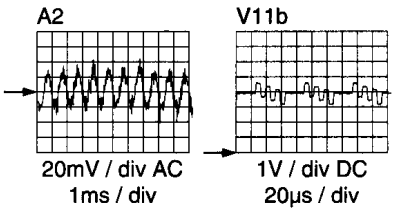
	SND02 STEREO 3M	SND81 MONO 3M BGLL
2164	---	1R
3142	---	---
3169	---	---
3677	---	8k2
3702	---	---
4700	---	1k5
4701	---	---
9111	+++	+++
9702	---	+++

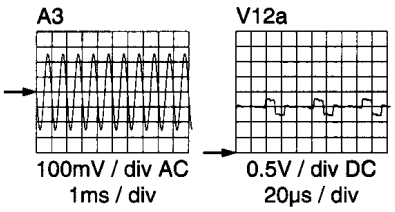
Son & Chrominance

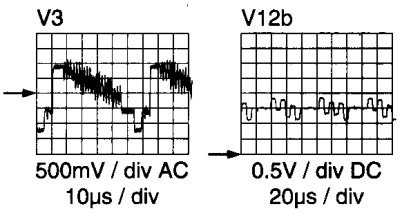


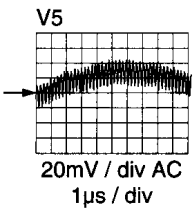








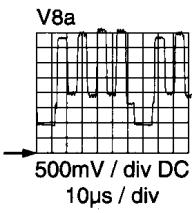


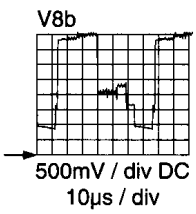


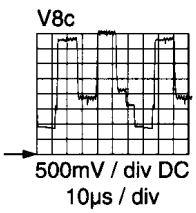
→ = 0V

V7 Secam (Only)

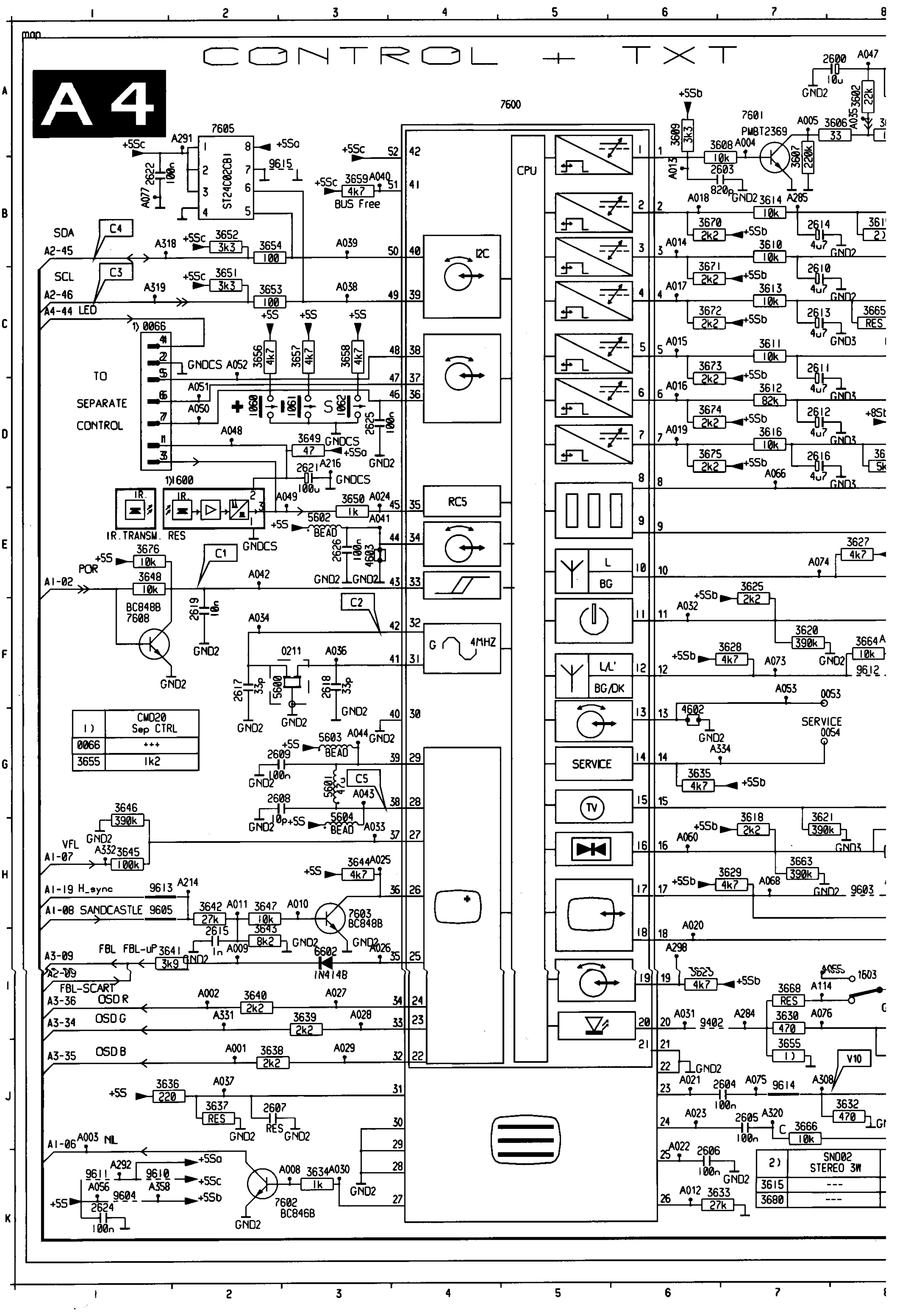
V9 8V6 DC







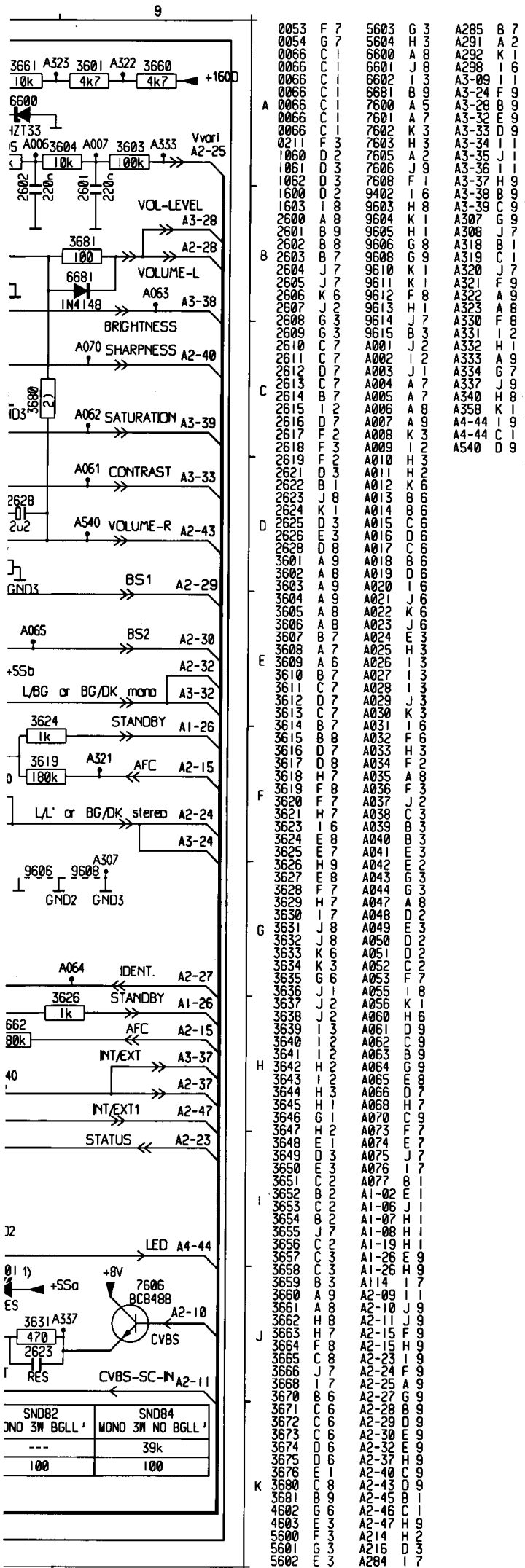
OSC_A3.AI



1)	CMD20 Sep CTRL
0066	+++
3655	1k2

2)	SND02 STEREO 3W
3615	---
3680	---

Commande & Télétexte



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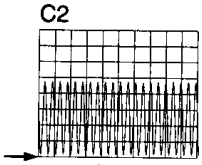
	0066	C 1	6600	A 8	A292	K 1
	0066	C 1	6601	J 8	A298	I 6
	0066	C 1	6602	I 3	A3-09	I 1
	0066	C 1	6681	B 9	A3-24	F 9
A	0066	C 1	7600	A 5	A3-28	B 9
	0066	C 1	7601	A 7	A3-32	E 9
	0066	C 1	7602	K 3	A3-33	D 9
	0211	F 3	7603	H 3	A3-34	I 1
	1060	D 2	7605	A 2	A3-35	J 1
	1061	D 3	7606	J 9	A3-36	I 1
	1062	D 3	7608	F 1	A3-37	H 9
	1600	D 2	9402	I 6	A3-38	B 9
	1603	I 8	9603	H 8	A3-39	C 9
	2600	A 8	9604	K 1	A307	G 9
	2601	B 9	9605	H 1	A308	J 7
	2602	B 8	9606	G 8	A318	B 1
B	2603	B 7	9608	G 9	A319	C 1
	2604	J 7	9610	K 1	A320	J 7
	2605	J 7	9611	K 1	A321	F 9
	2606	K 6	9612	F 8	A322	A 9
	2607	J 2	9613	H 1	A323	A 8
	2608	G 3	9614	J 7	A330	F 8
	2609	G 3	9615	B 3	A331	I 2
	2610	C 7	A001	J 2	A332	H 1
	2611	C 7	A002	I 2	A333	A 9
	2612	D 7	A003	J 1	A334	G 7
	2613	C 7	A004	A 7	A337	J 9
C	2614	B 7	A005	A 7	A340	H 8
	2615	I 2	A006	A 8	A358	K 1
	2616	D 7	A007	A 9	A4-44	I 9
	2617	F 2	A008	K 3	A4-44	C 1
	2618	F 3	A009	I 2	A540	D 9
	2619	F 2	A010	H 3		
	2621	D 3	A011	H 2		
	2622	B 1	A012	K 6		
	2623	J 8	A013	B 6		
	2624	K 1	A014	B 6		
D	2625	D 3	A015	C 6		
	2626	E 3	A016	D 6		
	2628	D 8	A017	C 6		
	3601	A 9	A018	B 6		
	3602	A 8	A019	D 6		
	3603	A 9	A020	I 6		
	3604	A 9	A021	J 6		
	3605	A 8	A022	K 6		
	3606	A 8	A023	J 6		
	3607	B 7	A024	E 3		
	3608	A 7	A025	H 3		
E	3609	A 6	A026	I 3		
	3610	B 7	A027	I 3		
	3611	C 7	A028	I 3		
	3612	D 7	A029	J 3		
	3613	C 7	A030	K 3		
	3614	B 7	A031	I 6		
	3615	B 8	A032	F 6		
	3616	D 7	A033	H 3		
	3617	D 8	A034	F 2		
	3618	H 7	A035	A 8		
	3619	F 8	A036	F 3		
F	3620	F 7	A037	J 2		
	3621	H 7	A038	C 3		
	3623	I 6	A039	B 3		
	3624	E 8	A040	B 3		
	3625	E 7	A041	E 3		
	3626	H 9	A042	E 2		
	3627	E 8	A043	G 3		
	3628	F 7	A044	G 3		
	3629	H 7	A047	A 8		
	3630	I 7	A048	D 2		
G	3631	J 8	A049	E 3		
	3632	J 8	A050	D 2		
	3633	K 6	A051	D 2		
	3634	K 3	A052	C 2		
	3635	G 6	A053	F 7		
	3636	J 1	A055	I 8		
	3637	J 2	A056	K 1		
	3638	J 2	A060	H 6		
	3639	I 3	A061	D 9		
	3640	I 2	A062	C 9		
	3641	I 2	A063	B 9		
H	3642	H 2	A064	G 9		
	3643	I 2	A065	E 8		
	3644	H 3	A066	D 7		
	3645	H 1	A068	H 7		
	3646	G 1	A070	C 9		
	3647	H 2	A073	F 7		
	3648	E 1	A074	E 7		
	3649	D 3	A075	J 7		
	3650	E 3	A076	I 7		
	3651	C 2	A077	B 1		
	3652	B 2	A1-02	E 1		
I	3653	C 2	A1-06	J 1		
	3654	B 2	A1-07	H 1		
	3655	J 7	A1-08	H 1		
	3656	C 2	A1-19	H 1		
	3657	C 3	A1-26	E 9		
	3658	C 3	A1-26	H 9		
	3659	B 3	A114	I 7		
	3660	A 9	A2-09	I 1		
	3661	A 8	A2-10	J 9		
	3662	H 8	A2-11	J 9		
J	3663	H 7	A2-15	F 9		
	3664	F 8	A2-15	H 9		
	3665	C 8	A2-23	I 9		
	3666	J 7	A2-24	F 9		
	3668	I 7	A2-25	A 9		
	3670	B 6	A2-27	G 9		
	3671	C 6	A2-28	B 9		
	3672	C 6	A2-29	D 9		
	3673	C 6	A2-30	E 9		
	3674	D 6	A2-32	E 9		
	3675	D 6	A2-37	H 9		
	3676	E 1	A2-40	C 9		
K	3680	C 8	A2-43	D 9		
	3681	B 9	A2-45	B 1		
	4602	G 6	A2-46	C 1		
	4603	E 3	A2-47	H 9		
	5600	F 3	A214	H 2		
	5601	G 3	A216	D 3		
	5602	E 3	A284	I 7		

C1 5V DC

C3 5V DC

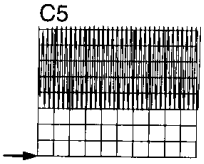
C4 5V DC

C2



1V / div DC
0.5µs / div

C5



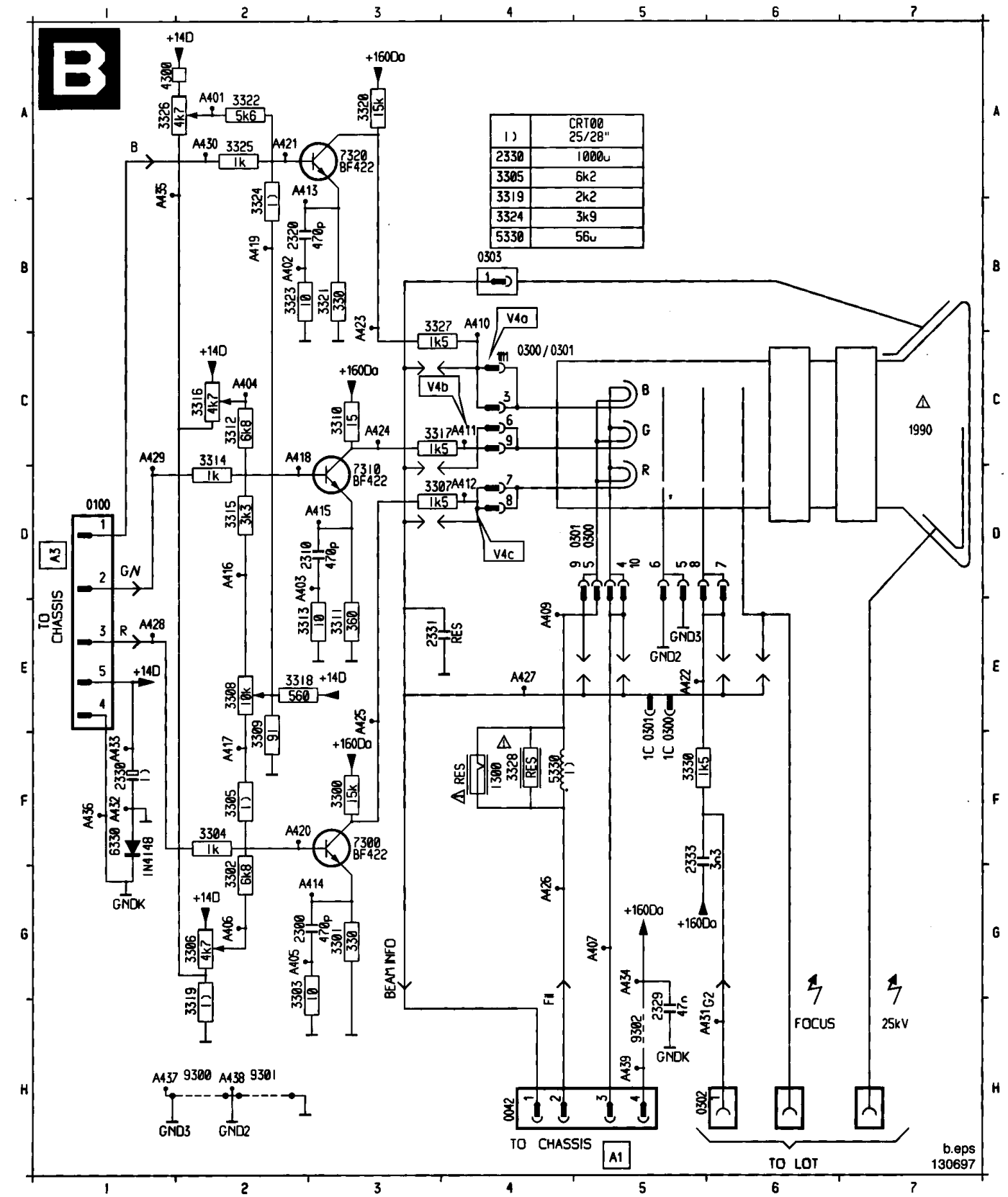
500mV / div DC
0.5µs / div

→ = 0V

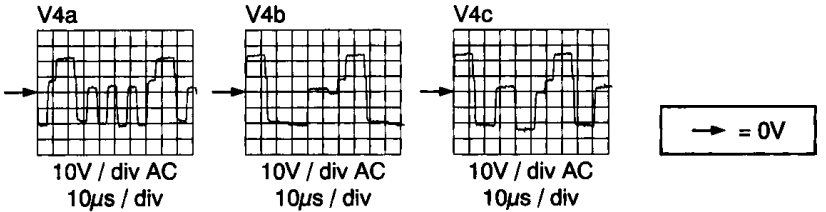
OSC_A4.AI

CRT panel / Bildröhrenplatine / Platine TRC

0042	H 4	0300	D 5	0303	B 4	3302	G 2	3313	E 2	3324	B 2	7320	A 3	A409	E 4	A420	F 2	A431	H 6
0042	H 4	0300	C 4	1300	F 4	3303	G 2	3314	C 2	3325	A 2	9300	H 2	A410	B 4	A421	A 2	A432	F 1
0042	H 4	0301	F 5	2300	G 2	3304	F 2	3315	D 2	3326	A 1	9301	H 2	A411	C 4	A422	E 5	A433	F 1
0042	H 4	0301	D 5	2310	D 3	3305	F 2	3316	C 2	3327	B 3	9302	H 5	A412	D 4	A423	B 3	A434	G 5
0100	D 1	0301	C 4	2320	B 2	3306	G 2	3317	C 3	3328	F 4	A401	A 2	A413	A 2	A424	C 3	A435	A 1
0300	F 5	0301	D 5	2329	H 5	3307	D 3	3318	E 2	3330	F 5	A402	B 2	A414	G 3	A425	E 3	A436	F 1
0300	C 4	0301	C 4	2330	F 1	3308	E 2	3319	H 2	4300	A 1	A403	D 2	A415	D 3	A426	G 4	A437	H 1
0300	D 5	0301	D 5	2331	E 3	3309	F 2	3320	A 3	5330	F 4	A404	C 2	A416	D 2	A427	E 4	A438	H 2
0300	D 5	0301	D 5	2333	F 5	3310	C 3	3321	B 3	6330	F 1	A405	G 2	A417	F 2	A428	E 1	A439	H 5
0300	D 5	0301	C 4	3300	F 3	3311	E 3	3322	A 2	7300	F 3	A406	G 2	A418	C 2	A429	C 1		
0300	C 4	0302	H 5	3301	G 3	3312	C 2	3323	B 2	7310	D 3	A407	G 5	A419	B 2	A430	A 2		

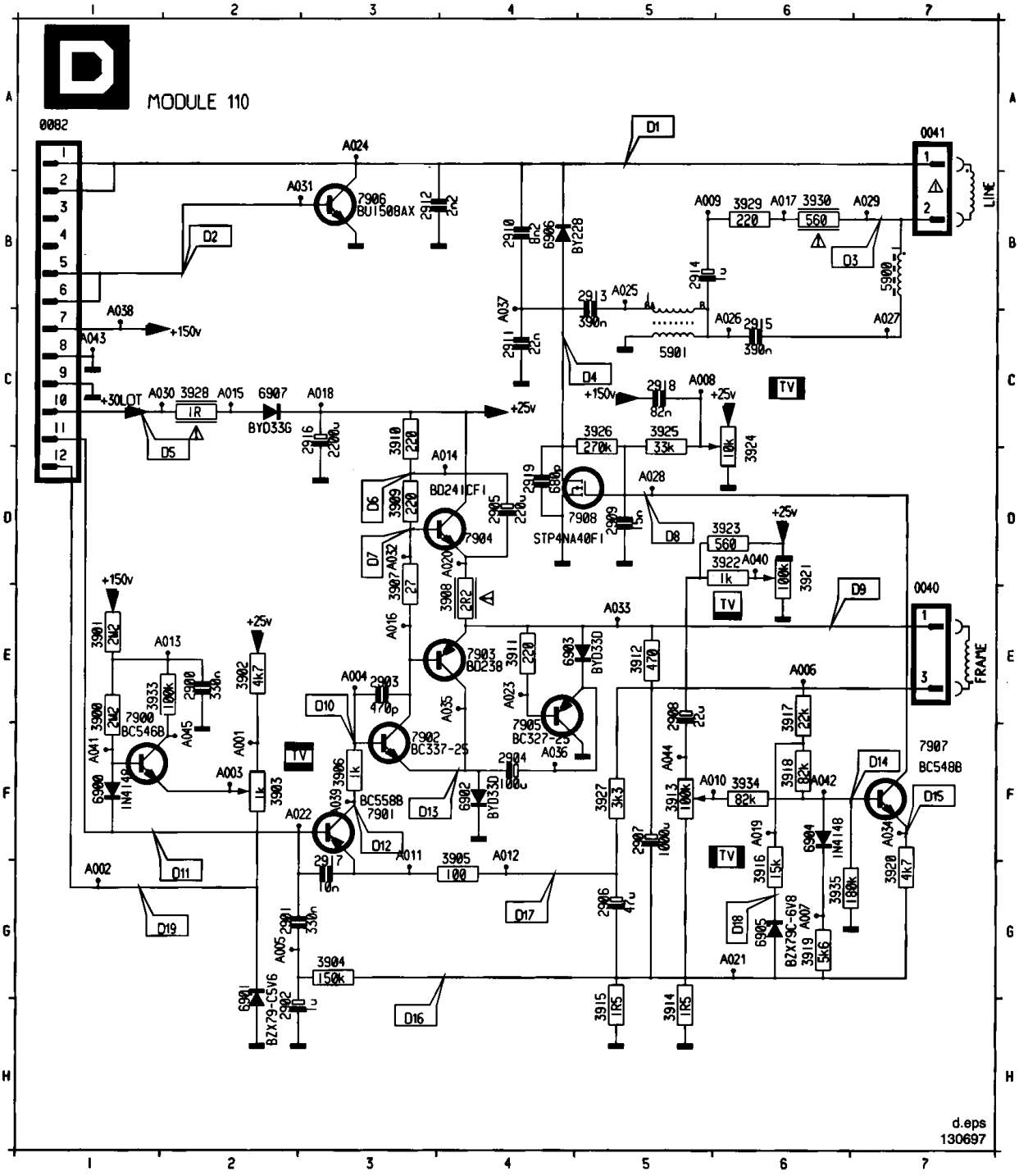


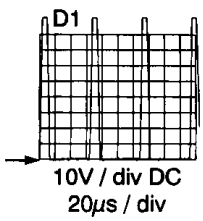
1)	CRT00 25/28"
2330	1000u
3305	6k2
3319	2k2
3324	3k9
5330	56u

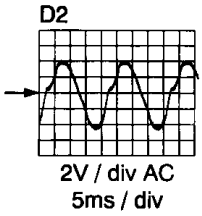


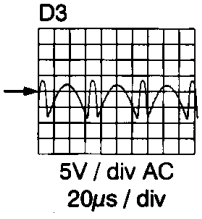
Deflection module 110° / Ablenkung-Modul 110° / Module de déviation 110°

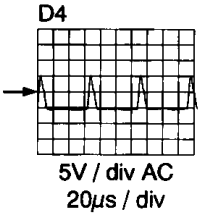
0040	E 7	2910	B 4	3903	F 2	3916	G 6	3929	B 6	6906	B 4	A003	F 2	A016	E 3	A029	B 7	A042	F 6
0041	A 7	2911	C 4	3904	G 3	3917	E 6	3930	B 6	6907	C 2	A004	E 3	A017	B 6	A030	C 1	A043	C 1
0082	A 1	2912	B 3	3905	G 4	3918	F 6	3933	E 1	7900	E 1	A005	G 2	A018	C 3	A031	B 2	A044	F 5
2900	E 2	2913	B 5	3906	F 3	3919	G 6	3934	F 6	7901	F 3	A006	E 6	A019	F 6	A032	D 3	A045	F 2
2901	G 2	2914	B 5	3907	E 3	3920	G 7	3935	G 6	7902	F 3	A007	G 6	A020	D 4	A033	E 5		
2902	H 2	2915	C 6	3908	E 4	3921	D 6	5900	B 7	7903	E 4	A008	C 5	A021	G 6	A034	F 7		
2903	E 3	2916	C 3	3909	D 3	3922	D 6	5901	C 5	7904	D 4	A009	B 5	A022	F 2	A035	E 4		
2904	F 4	2917	G 3	3910	C 3	3923	D 6	6900	F 1	7905	F 4	A010	F 5	A023	E 4	A036	F 4		
2905	D 4	2918	C 5	3911	E 4	3924	D 6	6901	G 2	7906	B 3	A011	F 3	A024	A 3	A037	C 4		
2906	G 5	2919	D 4	3912	E 5	3925	C 5	6902	F 4	7907	F 7	A012	F 4	A025	B 5	A038	C 1		
2907	F 5	3900	E 1	3913	F 5	3926	C 5	6903	E 4	7908	D 4	A013	E 2	A026	C 6	A039	F 5		
2908	E 5	3901	E 1	3914	H 5	3927	F 5	6904	F 6	A001	F 2	A014	D 4	A027	C 7	A040	D 6		
2909	D 5	3902	E 2	3915	H 5	3928	C 2	6905	G 6	A002	G 1	A015	C 2	A028	D 5	A041	F 1		

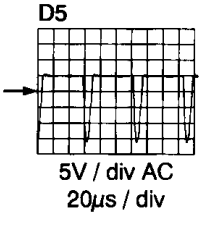


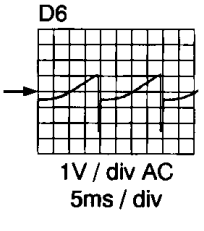


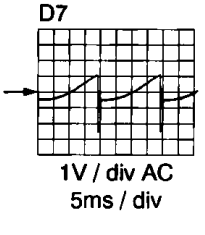


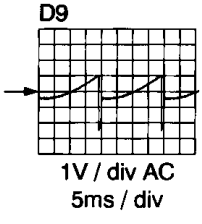


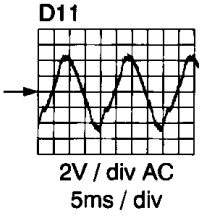


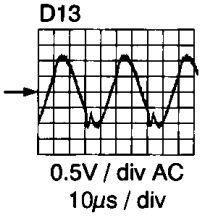


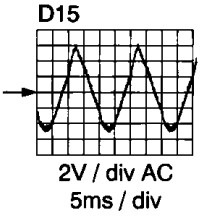


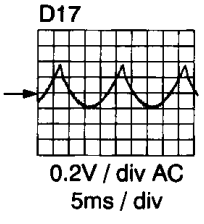


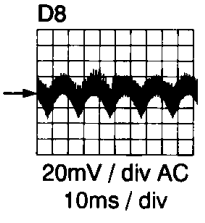


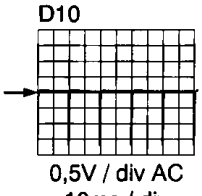


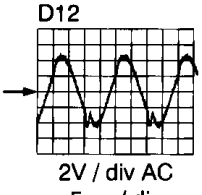


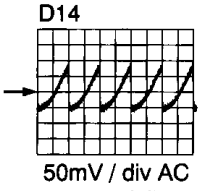


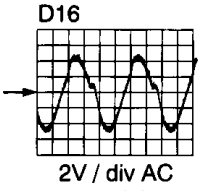


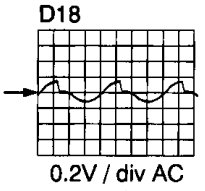


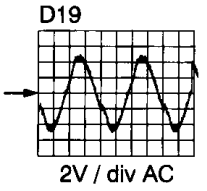




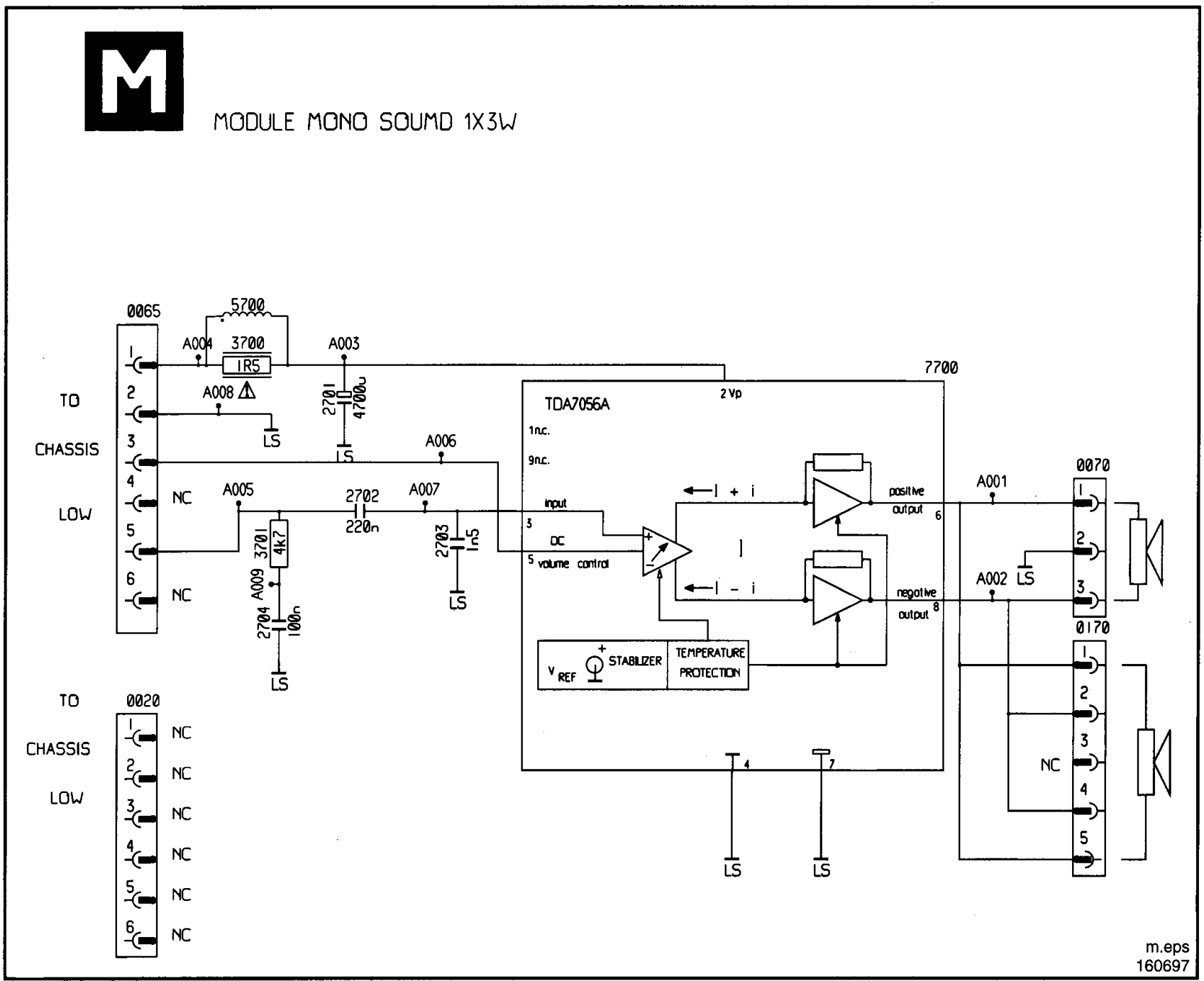




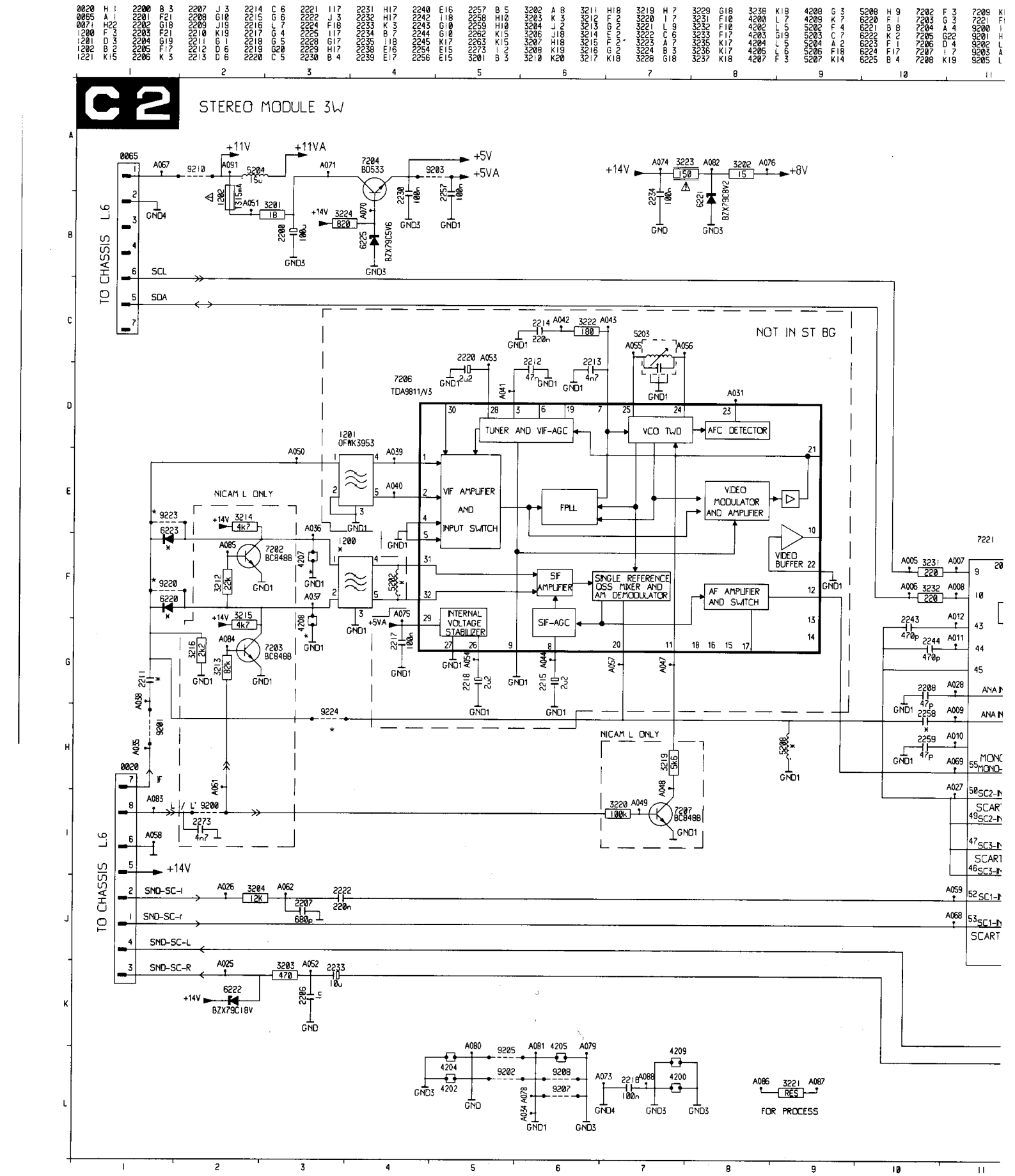




3W amplifier mono/ 3W Verstärker Mono / 3W amplificateur mono



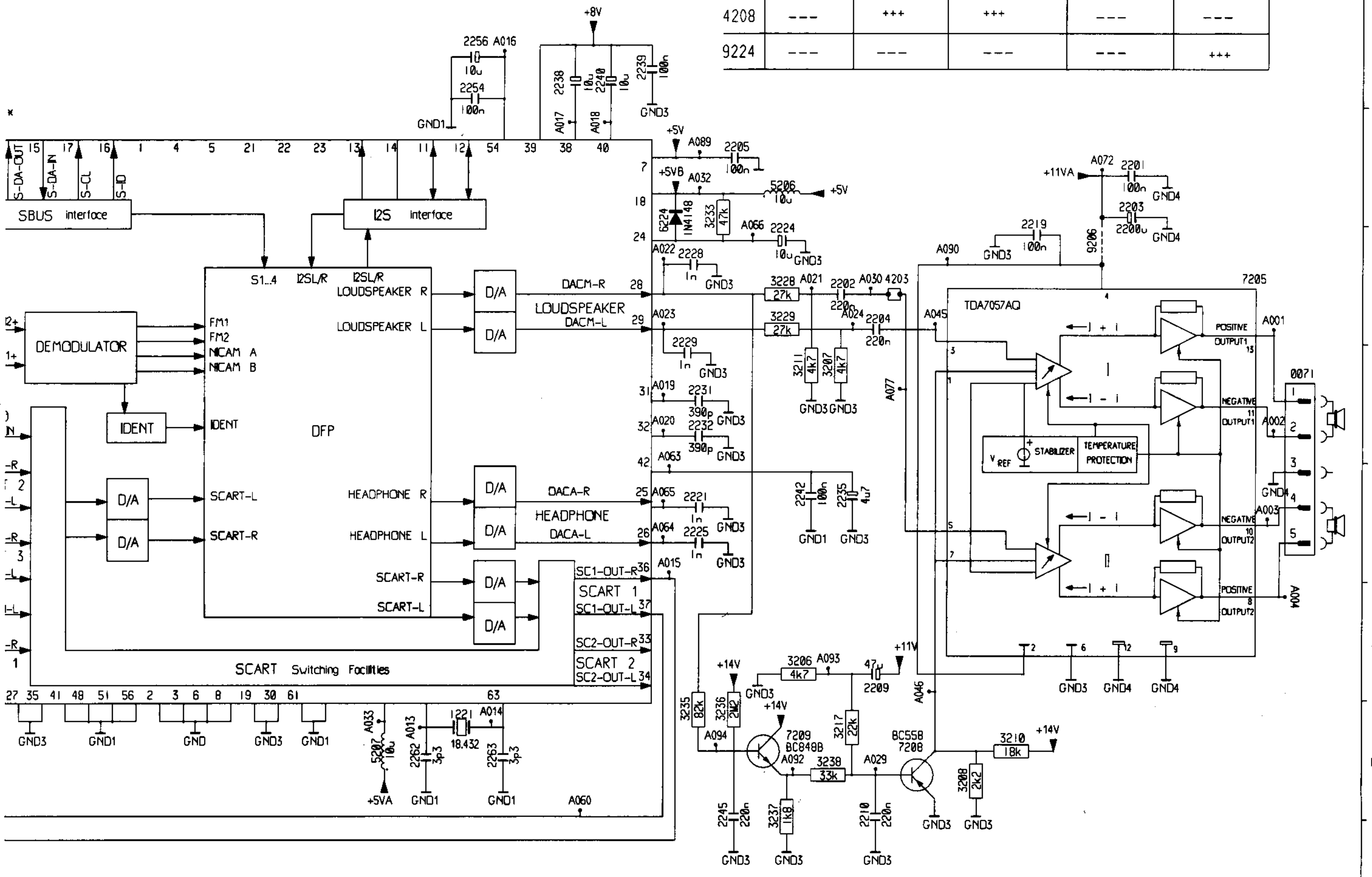
2 x 3W amplifier / 2 x 3W Verstärker / 2 x 3W amplificateur



8	9206	G20	A001	G22	A008	F11	A015	I17	A022	G17	A029	K19	A036	E 3	A043	C 7	A050	E 3	A057	G 7	A064	I17	A071	A 3	A078	L 6	A085	F 2	A092	K18
1	9207	L 6	A002	H22	A009	H11	A016	E15	A023	G17	A030	G19	A037	F 3	A044	G 6	A051	B 2	A058	I 1	A065	I17	A072	F20	A079	L 6	A086	L 8	A093	J18
2	9208	L 6	A003	I22	A010	H11	A017	F16	A024	G18	A031	D 8	A038	G 1	A045	G19	A052	K 3	A059	J11	A066	G18	A073	L 7	A080	L 5	A087	L 9	A094	K17
1	9210	A 2	A004	J22	A011	G11	A018	F16	A025	K 2	A032	F17	A039	E 4	A046	J19	A053	C 5	A060	K16	A067	A 1	A074	A 7	A081	L 6	A088	L 7		
5	9220	F 1	A005	F10	A012	F11	A019	H17	A026	J 2	A033	K14	A040	E 4	A047	G 7	A054	G 5	A061	H 2	A068	J11	A075	F 4	A082	A 8	A089	F17		
5	9223	E 1	A006	F10	A013	K15	A020	H17	A027	H11	A034	L 6	A041	D 5	A048	H 7	A055	C 7	A062	J 3	A069	H11	A076	A 8	A083	I 1	A090	G19		
5	9224	H 3	A007	F11	A014	K15	A021	G18	A028	G11	A035	H 1	A042	C 6	A049	I 7	A056	C 7	A063	H17	A070	B 4	A077	H19	A084	G 2	A091	A 2		

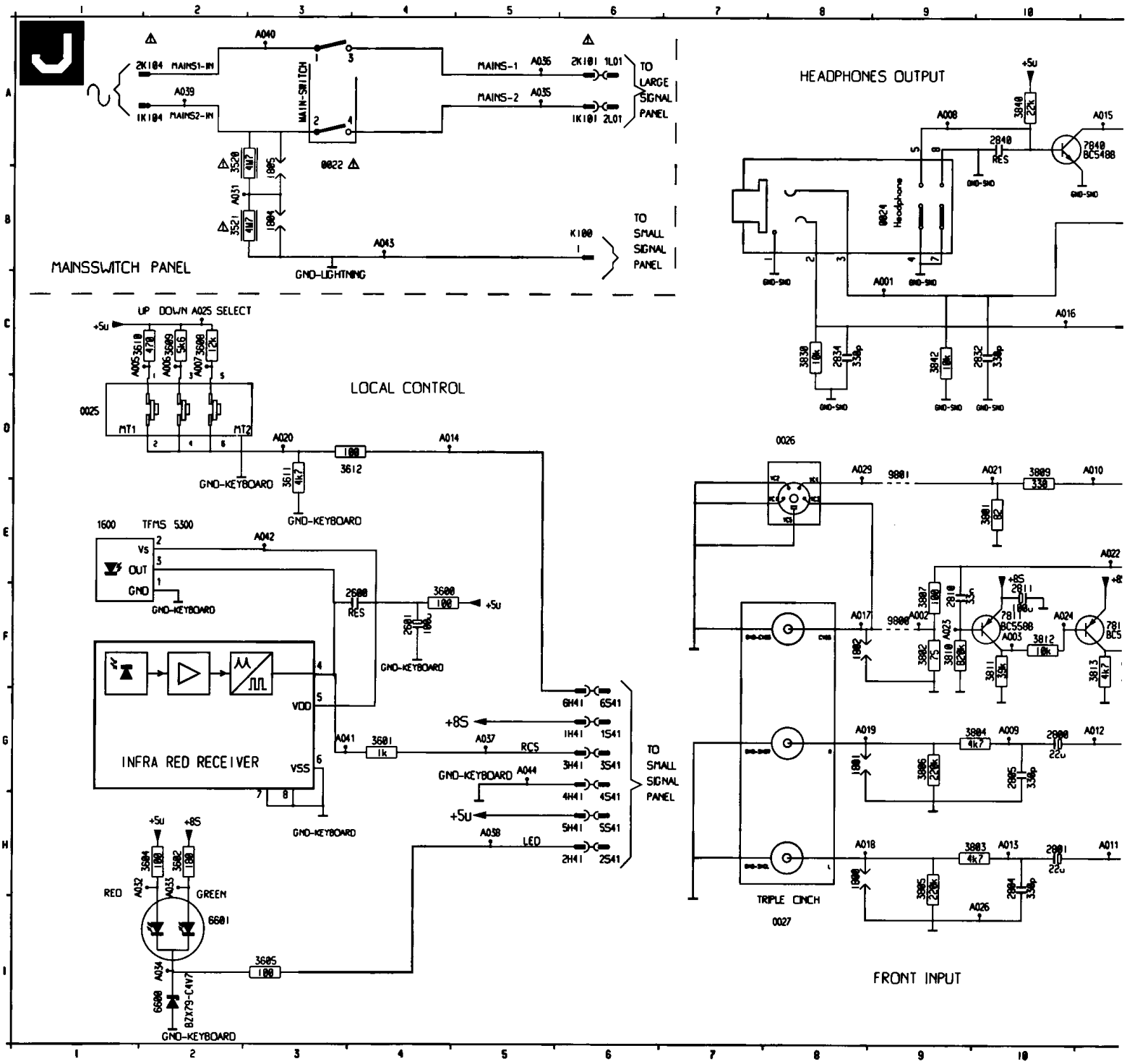
12 13 14 15 16 17 18 19 20 21 22

	NIC L	NIC I	NIC BG	NIC BG/DK	ST BG
1200	OPWK9456	OFWK9353	OFWG9353	OPWK9456	–
2211	47p	47p	47p	47p	12p
2258	4n7	4n7	4n7	4n7	4p7
5202	2U2	–	–	–	–
5208	–	–	–	–	39u
6220	1N4148	–	–	–	–
6223	1N4148	–	–	–	–
7221	MPS3410 BF7	MPS3410 BF7	MPS3410 BF7	MSP3410 BF7	MPS3400 TC15
9220	---	---	---	+++	---
9223	---	+++	+++	---	---
4207	---	---	---	+++	---
4208	---	+++	+++	---	---
9224	---	---	---	---	+++

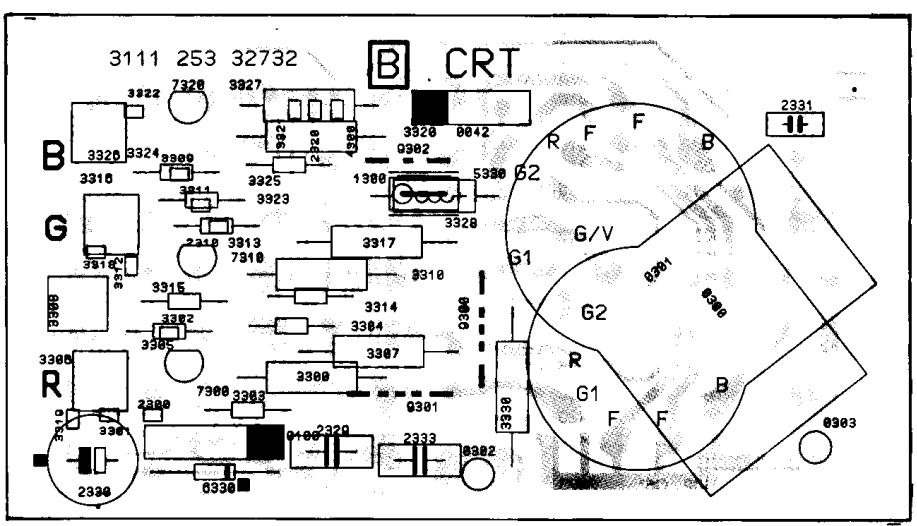


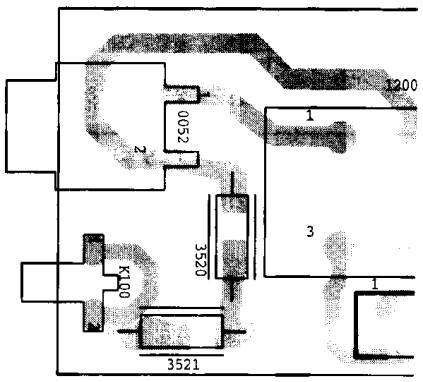
12 13 14 15 16 17 18 19 20 21 22

Separate controls & Mains module / Bedienung &



CRT PANEL

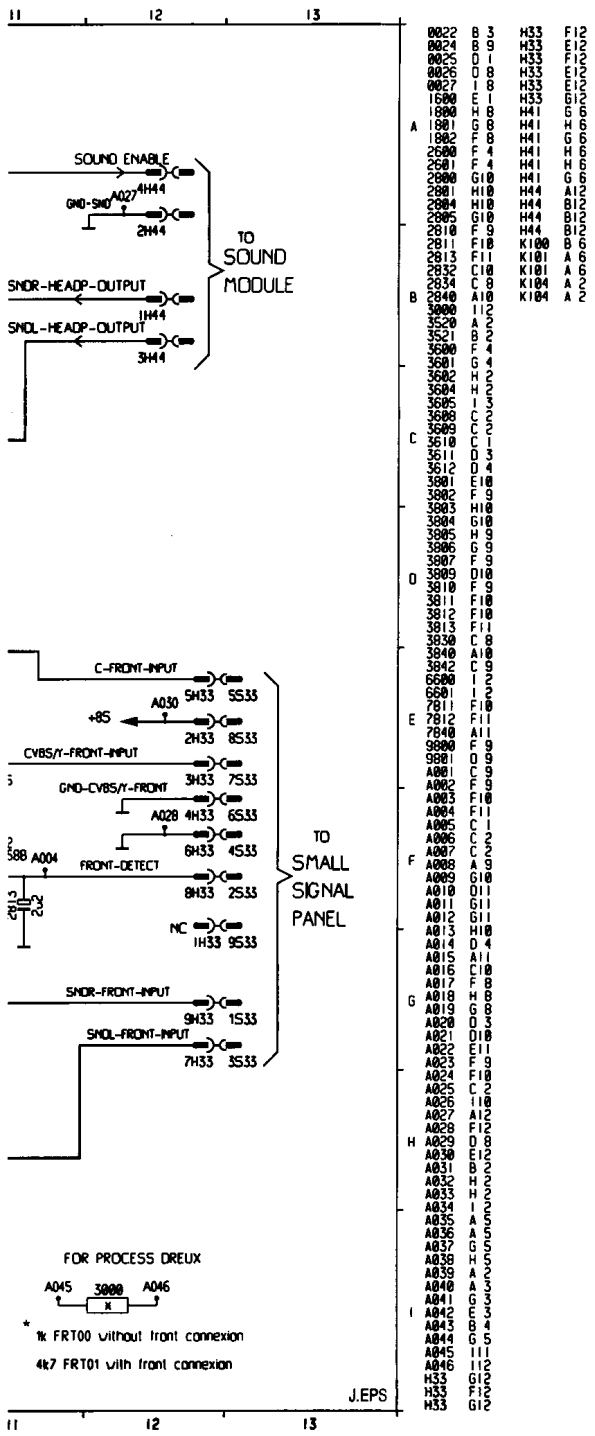


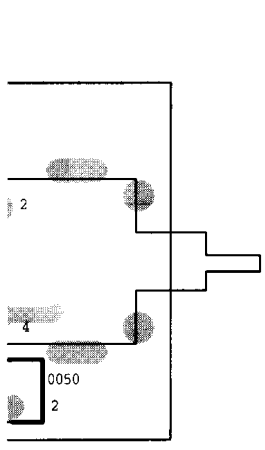


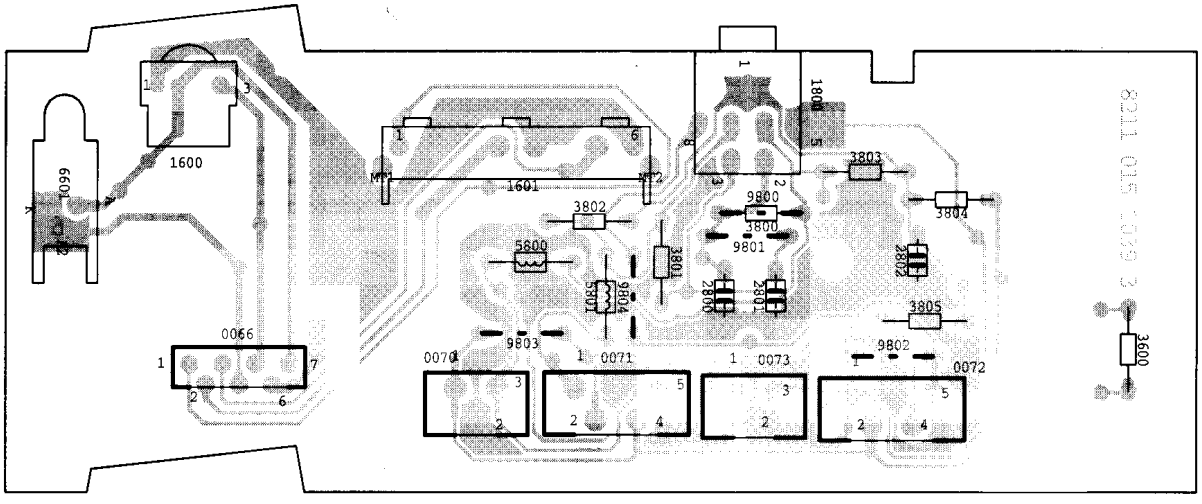
Netz-Modul / Commande & Module du secteur

DEFLECTION MODULE 110°

0040 A 2	2904 A 3	2911 C 2	2918 C 2	3905 C 3	3912 A 3	3919 A 2	3926 A 1	3935 B 2	6904 A 2	7903 A 3
0041 B 1	2905 A 1	2912 C 1	2919 A 1	3906 C 3	3913 B 3	3920 A 2	3927 B 3	5900 B 1	6905 A 3	7904 A 2
0082 C 1	2906 B 3	2913 C 2	3900 C 3	3907 A 2	3914 B 3	3921 A 3	3928 C 2	5901 B 2	6906 C 2	7905 B 3
2900 C 3	2907 B 3	2914 B 2	3901 C 3	3908 A 2	3915 B 3	3922 A 3	3929 B 1	6900 C 3	6907 C 2	7906 C 1
2901 C 3	2908 B 3	2915 B 1	3902 A 3	3909 A 1	3916 A 2	3923 A 2	3930 B 1	6901 B 3	7900 C 3	7907 A 2
2902 C 3	2909 A 1	2916 C 2	3903 A 3	3910 A 1	3917 A 3	3924 A 1	3933 C 3	6902 A 3	7901 C 3	7908 A 1
2903 A 3	2910 C 1	2917 C 2	3904 B 3	3911 B 3	3918 A 2	3925 A 1	3934 B 2	6903 B 3	7902 A 3	







8. Electrical adjustments

8.1 Adjustments on the 110 module panel

8.1.1 Horizontal amplitude

Is adjusted with potentiometer R3924

8.1.2 Vertical centring

Is adjusted with potentiometer R3921

8.1.3 Picture height

Is adjusted with potentiometer R3903

8.1.4 East-west correction

Is adjusted by potentiometer R3913

Note: R3903, R3919, R3921 and R3924 are located on the 110° module pcb.

8.1.5 Horizontal centring (main pcb)

Is adjusted with potentiometer R3129 on the main PCB

8.1.6 Focusing

Is adjusted with the focusing potentiometer in the line output transformer

8.1.7 AFC

a) Adjustment of the AFC and picture demodulator (all versions).
Select a non secam L/L' system in the SDAM mode (negative modulation). Switch the tuner to HIGH BAND (pin 11 of tuner 1100 grounded). Connect a pattern generator to pin 17 of the tuner via a capacitor of 4.7nF and put a 82W resistor from the output of the generator to ground. Connect a DC voltmeter to pin 44 of IC7100.
Adjust coil 5100 to get 3V5 on pin 44 of IC7100.
The signal of the generator has to be 38.9 MHz.

b) Adjustment of the AFC and picture demodulator.
(BAND 1 L. France versions only).
Same story as a) only the frequency of the generator has to be 33.9Mhz with positive modulation.

8.1.8 RF AGC

If the picture of a strong local transmitter is reproduced distorted, adjust potentiometer R3130 until the picture is undistorted.

or: Connect a pattern generator (e.g. PM5518) to the aerial input with RF signal amplitude = 1mV. Connect a multimeter (DC) at pin 5 of the tuner. Adjust R3130 so that voltage at pin 5 of the tuner is 8V5 +/- 0V5 DC.

8.2 Adjustments on the CRT panel

8.2.1 VG2 cut-off points of picture tube

Apply a black CVBS signal at the input pin 20 of scart.
Adjust the brightness in order to have 1.6V during the line at the R,G,B outputs of the BIMOS pin 18,19,20 of IC7100.
Put potentiometers R3326, R3316 and R3306 to the minimum value (maximum voltage on the CRT cathodes). Adjust now VG2 till the colour that luminates first is not visible anymore.
Adjust now the other two potentiometers in such a way that they just don't luminate.
Potentiometer R3308 should always be in the mid-position.

9. Circuit description

9.1 For the description of the audio and video processing see the description in the AA5 AA service manual.

For the description of the power supply see the description in the L6.1 AA service manual.

General
The differences between L6.1 and L6.2 are:
- Large 25" and 28" picture tubes for L6.2
- Stereo 2 X 3 Watt/ stereo headphone
- Mono 3 Watt (also present in some L6.1 versions)

Electrical consequences are a new defection module (110 degrees), a 2 X 3 Watt stereo amplifier panel and some small adaptations on the L6.2 main panel(derived from L6.1).

9.2 110 deflection module

General
For the 25" and 28" sets a 110 module is needed for East/West correction. This panel is allocated on the right hand side of the mainboard (seen from the rear). East/west correction in this module is based on the diode-modulator principle; the current through the horizontal deflection coil is modulated. As this is done by a parabolic-shaped voltage, E/W distortion is corrected. This parabolic-shaped voltage is derived from a saw-tooth-shaped voltage of the frame deflection.

9.3 Frame (time base frame)

Because the raster part is fed by the primary side a galvanic isolator must be applied between IC 7100 (= so called Bimos ic) in the secondary side and the raster amplifier on primary side. This is realised by opto coupler (7422); this opto coupler will be switched and it will block the saw-tooth of the Bimos ic. So we don't use the saw-tooth of the Bimos((pin 42) or the feedback frame input(pin 41). The only information from the Bimos ic (=IC7100) is the flyback command (pin 43).
The output of this pin is a pulse of 6 to 0 Volts during 1 mS with a period of 20mS. This signal blocks transistor 7424 and this causes conduction of the opto coupler diode (7422). The internal transistor also conduct and pins 11 and 12 (connector 00820) of the 110 module will be short circuited.

9.4 Raster part

9.4.1 Saw-tooth generator

A saw-tooth must be created because we don't use it from the Bimos ic(see annex 5). Via 150V C2901 will be charged via R3901, R3900 and D6900; the function of D6901 is to determine the lower part of the potential level. After 20mS a signal coming from the Bimos ic will short-circuit pins 11 and 12 of connector 0082 and C2901 will be discharged. It is a must to have an amplitude on the screen independent of the 50Hz or 60Hz frequency of the mains; see circuit diagram annex 6. The emitter voltage of T7900 can be adjusted with potentiometer 3903; this is the top Voltage of the saw-tooth. This is the circuit for adjusting the vertical amplitude independent of the 50/60Hz frequency. The saw-tooth will control T7901 and this transistor controls the amplifier (= T7902, T7903 and T7904).D6902, D6903, T7905 and C2904 determines the flyback. This flyback pulse is negative and is created by an inverted polarity of C2904. During the deflection T7905 is blocked and C2904 charges; during the flyback T7905 conducts and the flyback pulse will be made.

9.5 East-West modulator

The parabola is taken on C2907; R3916 and D6905 determines the shape of the parabola and they corrects the upper and lower parts. The parabola is fed via C2908 to potentiometer 3913; this for adjusting the pin-cushion correction. Via T7904 this signal goes to MosFet 7908; the Vgs command has two functions by changing the Voltage of Vgs by potentiometer 3924: pin-cushion correction and horizontal amplitude adjustment.

9.6 Special components

- D6904 + R3916 : temperature compensation of Vbe (T7904)
- R3935 : trapezium correction
- C2909 : to avoid external radiation
- C2918 : to avoid "twisted or broken" lines

9.7 Line timebase

The control voltage of pin 37 of the Bimos ic (=ic7100) is derived via opto coupler pos 7420 to transistor T7421; then send via C2428 and C2421 to pins 5 and6 of connector 0082; this is the control of the base of T7906 (=BU1508AX). At the flyback diode between collector and mass there are two parts present to allow the East/west modulation. One part of this modulator consists of D6906, T7908, C2910 and C2911. The second part another diode is not visible in the circuit diagram but it is present in the MosFet 7908.
On pins 1 and 2 of the module the primary side of the LOT is connected. The LOT supplies the following voltages:
- 3-5 : 26 Volts after smoothing
- 10-8 : 14 Volts
- 9 : 160 volts for video amplifiers

9.8 Control and teletext (Diagram A4)

9.8.1 *Teletext*

Control and teletext are integrated in the same µC. If there is no TXT another µC is used with less pins. In the story below, the numbers mentioned are the numbers mentioned outside the housing of IC7600.
The CVBS-signal is fed to pin 23 or 24 depending on the fact if it is the internal or external CVBS-signal. In this way teletext can be used on the ext- and the int-signal.
The teletext information and OSD-information is present at pin 32-33-34.

9.8.2 *Control*

µC-connections.

Supply voltage (pin 52);
If this voltage is present and the power-on signal is high the µC will start.
I^2C-Bus (pin 50-49);
This bus is used to communicate with the EEPROM in which the settings are stored.
Local keyboard (pin 48-47-46);
These three inputs are present as an input for the local keyboard. The inputs become connected to ground if a key is pressed.
IR-input (pin 45);
Input for the remote-control commands
TXT / no TXT (pin 44);
Depending on the fact if jumper 4600 or 4603 is placed, the µC is told if the set is a TXT or no-TXT set.
POR (pin 43);
If the POR-signal is low the µC will not start. The µC waits until this signal becomes high. In this way the µC knows that the supply-voltage is high enough.
4Mhz oscillator (pin 42-41);
The frequency of the oscillator of the µP is determined by this crystal 5600. In the TXT execution this frequency is 12Mhz.
Ground (pin 40);
Ground of the power-supply.
OSD-Generator (pin 39-38);
The components connected these pins determine the frequency of the OSD-generator. This is 6.5 Mhz.
VFL (pin 37);
This pin is used to tell the µP that vertical flyback takes place. This information is used for determine the location of the OSD.
Horizontal flyback (pin 36);
Pin to inform the µC that horizontal flyback takes place. Also information required for OSD.
Fast-blanking signal (pin 35);
This signal (FBL) is used to indicate the video controller that there is OSD or Teletext information. So this signal blanks the video information.
OSD-signals (pin 34-33-32);
These three signals are used to create OSD information in different colours.
Nil (pin 27);
Signal to generate a DC-current through the deflection coil to create a non interlaced mode during TXT-mode.
CVBS-inputs (pin 24-23);
These pins are used as input for teletext-sources. Pin 24 is input for the CVBS-signal of the scart-input and Pin 23 or the internal CVBS of the set.
LED-drive (pin 20);
Signal to drive the LED when the set is on. With TS7607 it is possible to light the LED with a higher luminance during stand-by.
Functional switch (pin 19);
In the future the switch connected to this pin could be used instead of a mainswitch.
Status (pin 18);
Input-pin to tell the µC that there is an external-signal present. Pin 18 high is external and pin 18 low is internal signal.
Int/Ext (pin17);
Control signal to select between internal and external(scart) signal. If pin 17 is "high" the internal signal is selected, else the external.
Standby/AFC (pin 16);
This pin acts as an input for AFC-control and as an output for standby command. This pin is only used in TXT-versions.
Ident (pin 15);
This signal is high if a CVBS signal is present and low if no CVBS-signal is present. This signal is created by IC7100-6A.
Service (pin 14);
When this pin is connected to ground the service-mode is entered. Use of mains-switch not necessary.
L/L' or BG/DK (pin 12);
In case of a LL' set, selection is made between L and L'. In case of a BGDK set, selection is made between BG and DK. If this pin is "high" then L' or DK is selected.
Standby/AFC (pin 11);
This pin acts as an input for AFC-control and as an output for standby command. This pin is only used in non TXT-versions.
L/BG (pin 10);
To make a selection between AM and FM sound. When this signal is high, than FM sound is selected.
BS1-BS2 (pin 8-9);
Signal lines to select the correct band of the tuner.

	BS1	BS2
VHF1	0	1
VHF2	1	0
UHF	1	1

Control-voltage outputs (pin 7-1);
These pins are used to control volume-right, contrast, saturation, sharpness, brightness, volume-left and the tuning voltage for the VST. In case of a mono BG set, volume is controlled by signal "volume-L" connected to pin 5 of IC7100-6F. In case of a mono multi-france set, volume is controlled by signal "vol-level" connected to pin 4 of IC7700 (output amplifier).