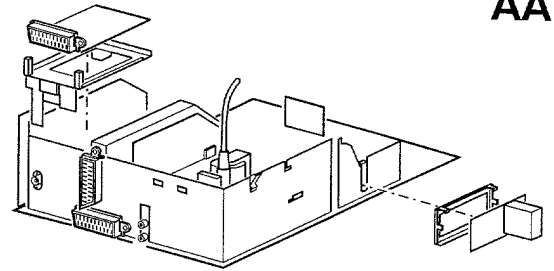


Service
Service
Service

GR 2.4
AA



CL 46532048/016
270694

Service Manual

Contents

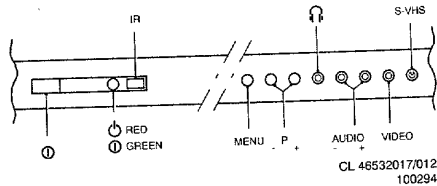
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1. Technical specification

Mains voltage	:220 - 240 V ($\pm 10\%$)
Mains frequency	:50 Hz ($\pm 10\%$)
Aerial input impedance	:75 Ω - coax
Minimum aerial voltage	:32 μ V
Maximum aerial voltage	:32mV
Pull-in range colour synchronization	: ± 300 Hz
Pull-in range horizontal synchronization	: ± 300 Hz

Local operation functions:



Programmes	: 0-89
VCR operation on programmes	: 0-89

Indications:

- On Screen Display (OSD)
- LED:
 - standby (red)
 - operation (green)
 - RC5 reception (flashing yellow)
 - I²C bus fault in μ P (flashing white)

2. Connection facilities

1. Specification of the terminal sockets

EXT1/EXT2

1	- Audio	\odot R	(0,5V _{RMS} ; 1k Ω)
2	- Audio	\ominus R	(0,2 - 2V _{RMS} ; 0,5 V _{nom} ; ≥ 10 k Ω)
3	- Audio	\odot L	(0,5V _{RMS} ; 1k Ω)
4	- Audio	\perp	
5	- Blue	\perp	
6	- Audio	\ominus L	(0,2 - 2V _{RMS} ; 0,5 V _{nom} ; ≥ 10 k Ω)
7	- Blue	\ominus	(0,7V _{pp} /75 Ω)
8	- CVBS-Status	\odot	(0-2V: int.; 9,5-12V: EXT-4/3; 4,5V-7,5V:EXT-16/9)
9	- Green	\perp	
10	--		
11	- Green	\ominus	(0,7V _{pp} ; 75 Ω)
12	--		
13	- Red	\perp	
14	--		
15	- Red /	\ominus	(0,7V _{pp} ; 75 Ω)
15	- C-SVHS	\ominus	(0,3V _{pp} ; 75 Ω)
16	- Status	\odot	(0-0,4V: FB-OFF; 1-3V: FB-ON; 75 Ω)
17	- CVBS	\odot \perp	
18	- CVBS	\ominus \perp	
19	- CVBS	\odot	(1V _{pp} /75 Ω)
20	- CVBS	\ominus	(1V _{pp} /75 Ω){EXT1}
20	- CVBS/	\ominus	(1V _{pp} /75 Ω){EXT2}
21	- Earth screen		

EXT4

1	- \perp		
2	- \perp		
3	- Y	\ominus	(1V _{pp} ; 75 Ω)
4	- C	\ominus	(1V _{pp} ; 75 Ω)
2x \odot	CINCH Audio	\ominus	L+R (0,2-2V _{RMS} ; 0,5 V _{nom} ≥ 10 k Ω)
1x \odot	CINCH CVBS	\ominus	(1V _{pp} ; 75 Ω)

EXT3

1	- Audio	\odot R	(0,5V _{RMS} ; 1k Ω)
2	- Audio	\ominus R	(0,2 - 2V _{RMS} ; 0,5 V _{nom} ; ≥ 10 k Ω)
3	- Audio	\odot L	(0,5V _{RMS} ; 1k Ω)
4	- Audio	\perp	
5	- \perp		
6	- Audio	\ominus L	(0,2 - 2V _{RMS} ; 0,5 V _{nom} ; ≥ 10 k Ω)
7	--		
8	- CVBS status 3	\odot	(0-2V: int.; 9,5-12V: ext.)
9	- \perp		
10	--		
11	--		
12	--		
13	- \perp		
14	- \perp		
15	--		
16	--		
17	- CVBS	\odot \perp	
18	- CVBS	\ominus \perp	
19	- CVBS	\odot	(1V _{pp} /75 Ω)
20	- CVBS	\ominus	(1V _{pp} /75 Ω)
21	- Earth screen		

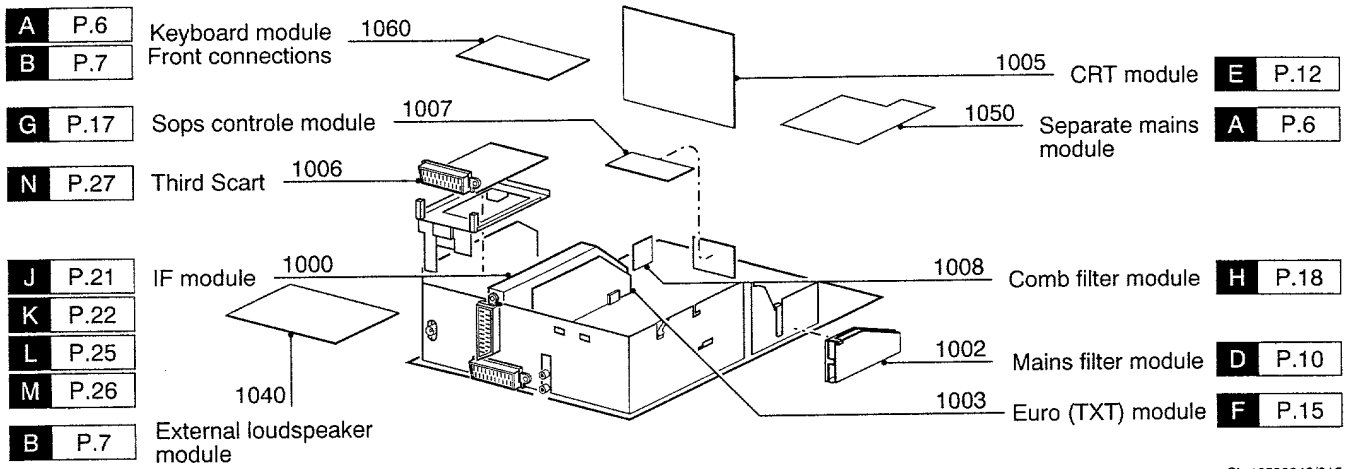
Audio out

2x \odot CINCH Audio \odot L+R (0,5V_{RMS}; 1k Ω)

Front

\odot 3.5mm 8 Ω


PWB location drawing



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3. Safety instructions, Maintenance instructions, Warnings and Notes

Safety Instructions for Repairs

1. Safety regulations require that during a repair:
 - the set should be connected to the mains via an isolating transformer
 - safety components, indicated by the symbol , should be replaced by components identical to the original ones
 - when replacing the CRT, safety goggles must be worn.
2. Safety regulations require also that after a repair:
 - the set should be returned in its original condition
 - the cabinet should be checked for defects to avoid touching, by the customer, of inner parts
 - the insulation of the mains lead should be checked for external damage
 - the mains lead strain relief should be checked on its function
 - the cableform and EHT cable are routed correctly and fixed with the mounted cable clamps in order to avoid touching of the CRT, hot components or heat sinks
 - the electrical resistance between mains plug and the secondary side is checked. This check can be done as follows:
 - unplug the mains cord and connect a wire between the two pins of the mains plug
 - switch on the TV with the main switch
 - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
 - switch off the TV and remove the wire between the two pins of the mains plug
 - thermally loaded solder joints should be resoldered. This includes components like LOT, the line output transistor, fly-back capacitor.

Maintenance Instructions

It is recommended to have a maintenance inspection carried out periodically by a qualified service employee. The interval depends on the usage conditions.

- When the set is used in a living room the recommended interval is 3 to 5 years. When the set is used in the kitchen or garage this interval is 1 year.
- During the maintenance inspection the above mentioned "safety instructions for repair" should be carried out. The power supply and deflection circuitry on the chassis, the CRT panel and the neck of the CRT should be cleaned.

Warnings

1. In order to prevent damage to IC's and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, it should be discharged using the method shown in Fig.3.1. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx. 30s).

2. ESD



All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten their life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit. Keep components and tools also at this same potential.

3. Be careful when taking measurements in the high-voltage section and on the picture tube.
4. Never replace modules or other components while the unit is switched on.
5. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.
6. In order to prevent measuring errors, the heat sinks should not be used as reference points for measurements. **The heat sink for the sound output amplifier (next to the channel selector) is connected to the -16 or -12 volts.**
7. Together with the deflection unit and any multipole unit, the flat square picture tubes used form an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.
8. The high-voltage cable in 21" units is glued in the line output transformer. This can therefore not be replaced.

Notes

1. The picture tube PCB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
2. Blackline units can be recognized by the thick, protected high-voltage cable. Non-blackline units have a thin, unprotected high-voltage cable.

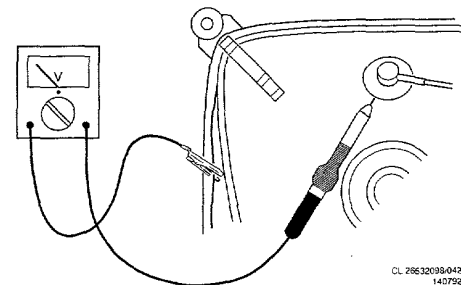


Fig. 3.1

CL 28632038042
140792

4. Mechanical instructions

1. Removing the back plate

It is only possible to remove the back plate after removing the screws on the top, side, possibly on the underneath and possibly above the EXT 2 connection. In the case of subwoofer units, the subwoofer speaker on the carrier panel should also be unplugged (see Fig. 4.2a).

2. Service position 1

Service position for module service and to measure test points

Unlock the chassis after the cables of the degaussing coil and any PIP module have been disconnected, and pull it backwards until all test points are accessible (see Fig. 4.2b).

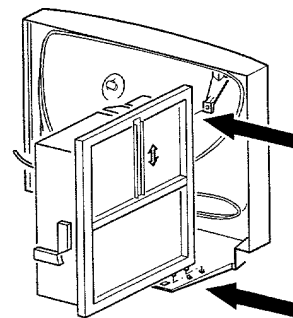
In order to make the tuner and the IF/sound module accessible, the bracket above these modules can be removed (see Fig. 4.3). With the exception of one fault message, the unit continues to function normally when the PIP module is not connected.

3. Service position 2

Service position for repair

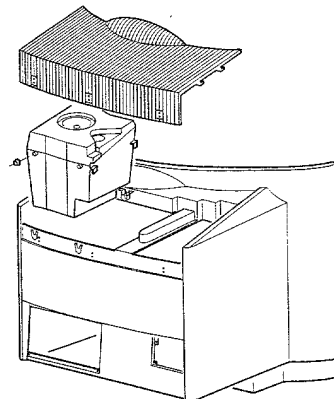
Place the chassis on the heat sink on the tuner side after service position 1 is reached (see Fig. 4.4). Or in case of FL4 cabinet there is a service hook where the chassis with bracket can be hung on (see fig. 4.1). Be careful with the wiring!!

Warning: make sure that the heat sink of the sound output amplifier does not form a short circuit with the raster/line heat sink if the bracket of the third scart has been removed !



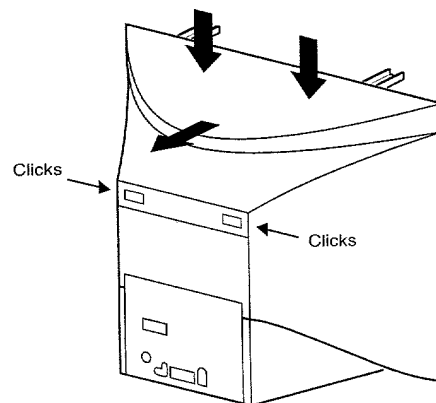
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270694

Fig. 4.1



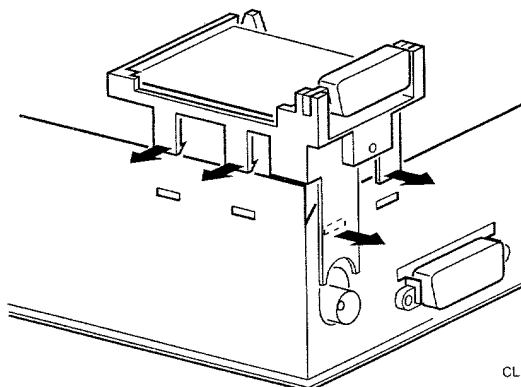
46532048/017
290694

Fig. 4.2a



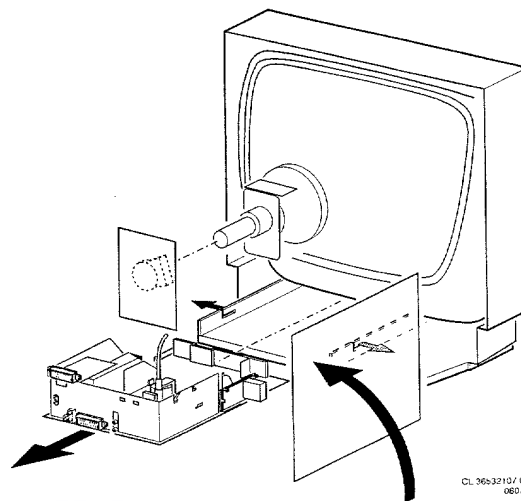
CL 36532107 018
191084

Fig. 4.2b



CL 36532107/014
290693

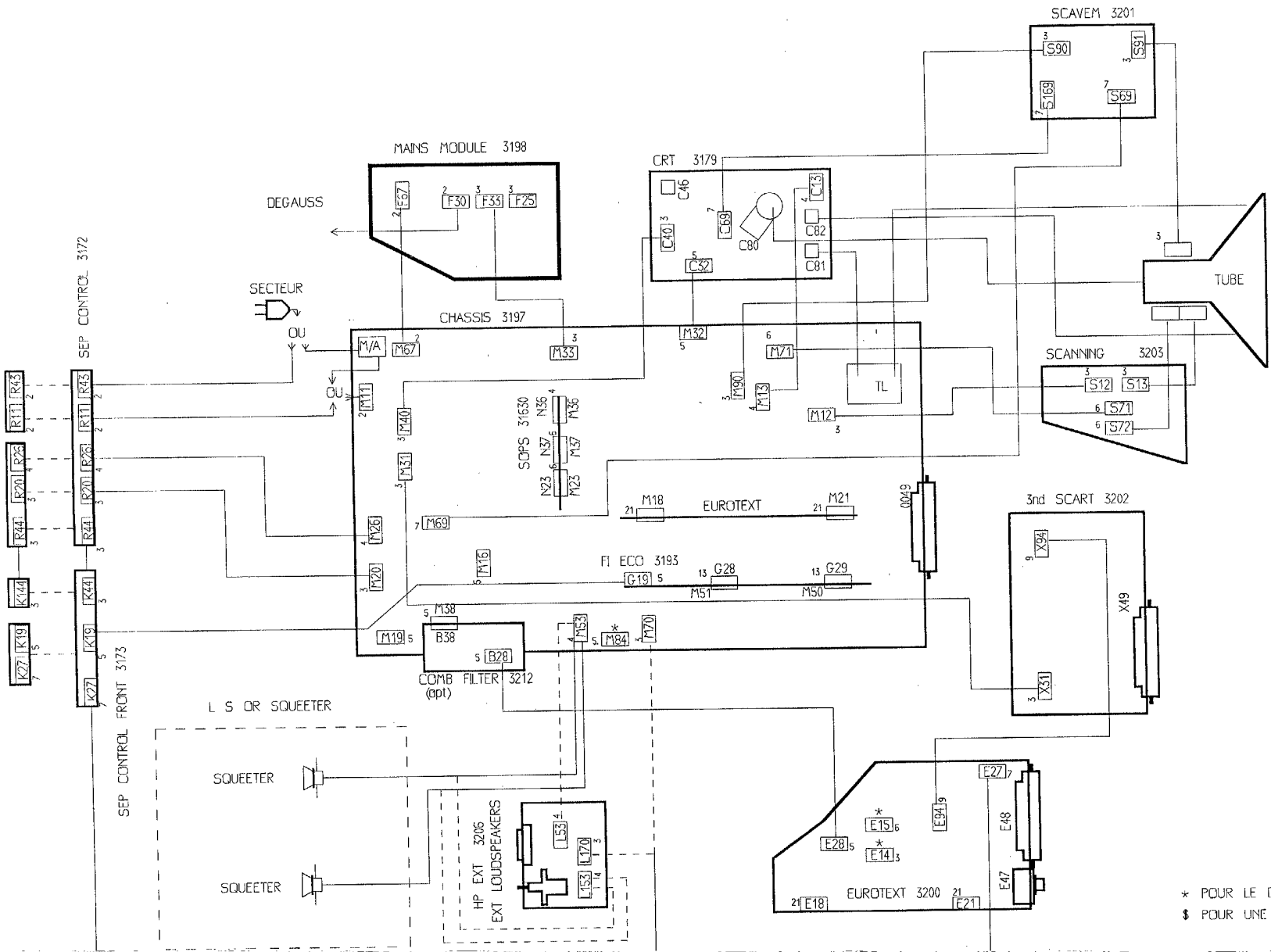
Fig. 4.3



CL 36532107 015
060793

Fig. 4.4

Wiring diagram/Verdrahtungsschema/Schéma de câblage

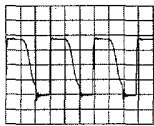


* POUR LE DOLBY
 \$ POUR UNE ESTHETIQUE 29' (379)

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TP1 = DC 15V9
TP2 = DC -15V9

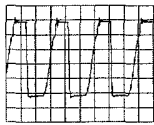
TP3



20V/div AC
5µs div

TP4 = DC 9V7

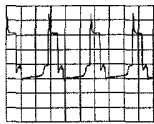
TP5



5V/div AC
5µs div

TP6 = DC 4V8
TP7 = DC 298V

TP8



2V/div AC
5µs div

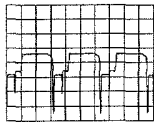
TP9



0.2V/div AC
5µs div

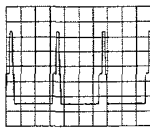
TP10 = DC 2V4
TP11 = DC 0V
TP12 = DC 2V7

TP14



2V/div AC
20µs div

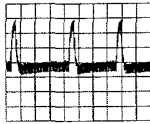
TP16



2V/div AC
20µs div

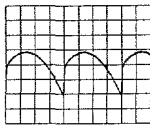
TP17 = DC 0V

TP18



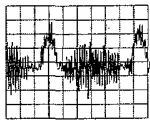
2V/div AC
5ms div

TP19



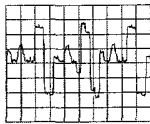
1V/div AC
5ms div

TP20



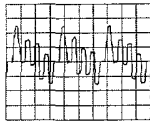
20mV/div AC
10µs div

TP21



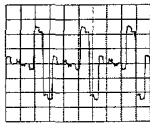
0.1V/div AC
20µs div

TP22



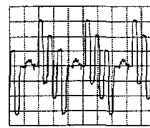
0.2V/div AC
20µs div

TP23



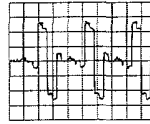
0.2V/div AC
20µs div

TP24



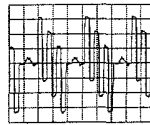
0.2V/div AC
20µs div

TP25



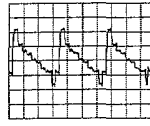
0.2V/div AC
20µs div

TP26



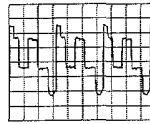
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20µs div

TP27



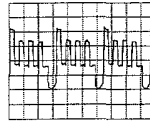
0.1V/div AC
20µs div

TP28



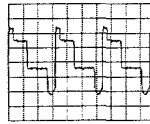
0.5V/div AC
20µs div

TP29



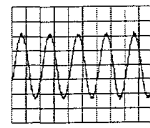
0.5V/div AC
20µs div

TP30



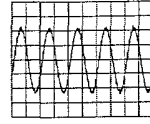
0.5V/div AC
20µs div

TP31



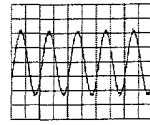
10mV/div AC
0.5ms div

TP32



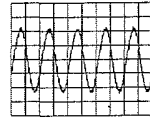
10mV/div AC
0.5ms div

TP33



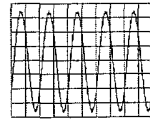
10mV/div AC
0.5ms div

TP34



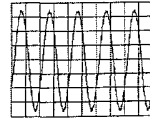
10mV/div AC
0.5ms div

TP35

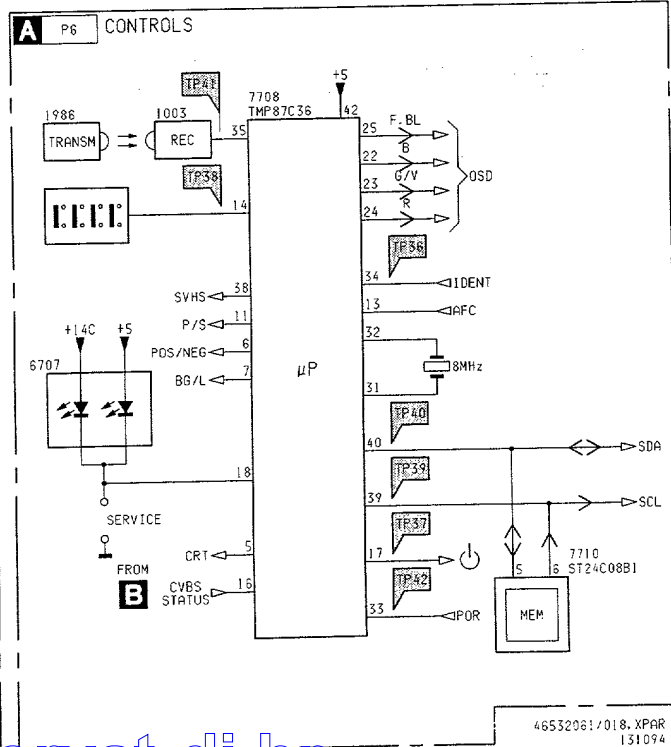
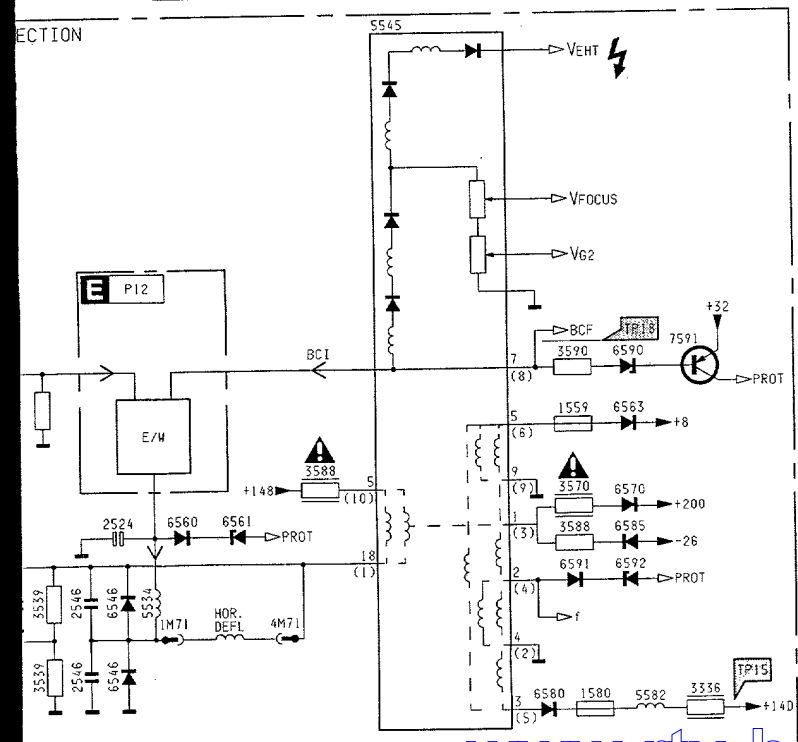
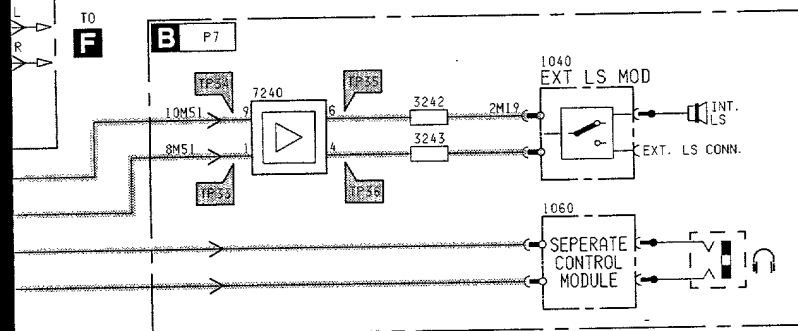
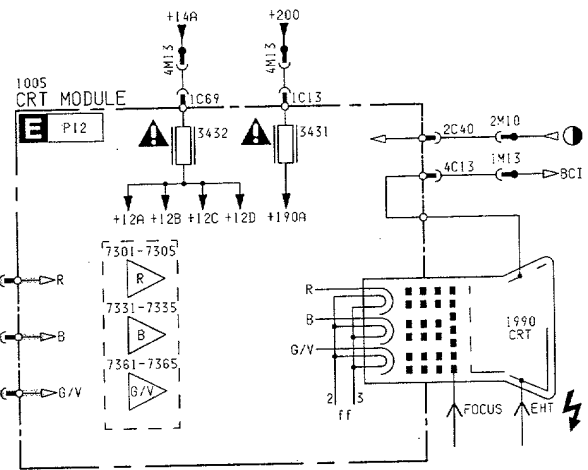
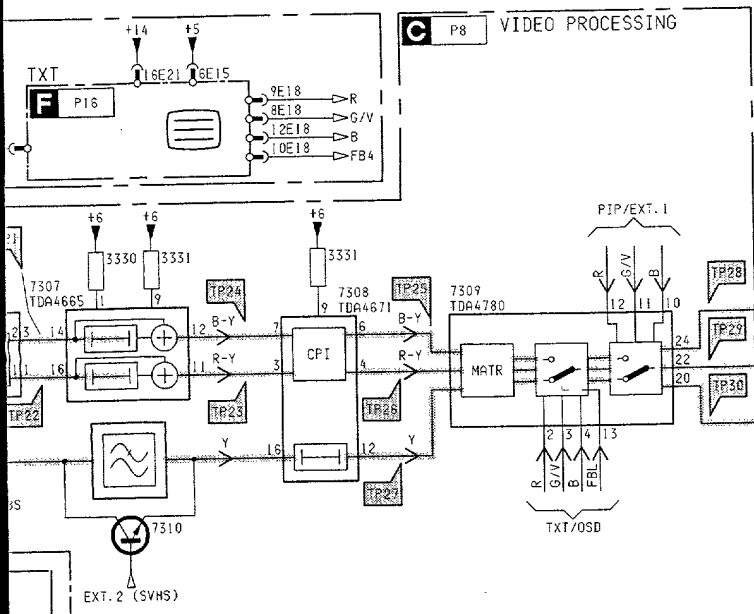


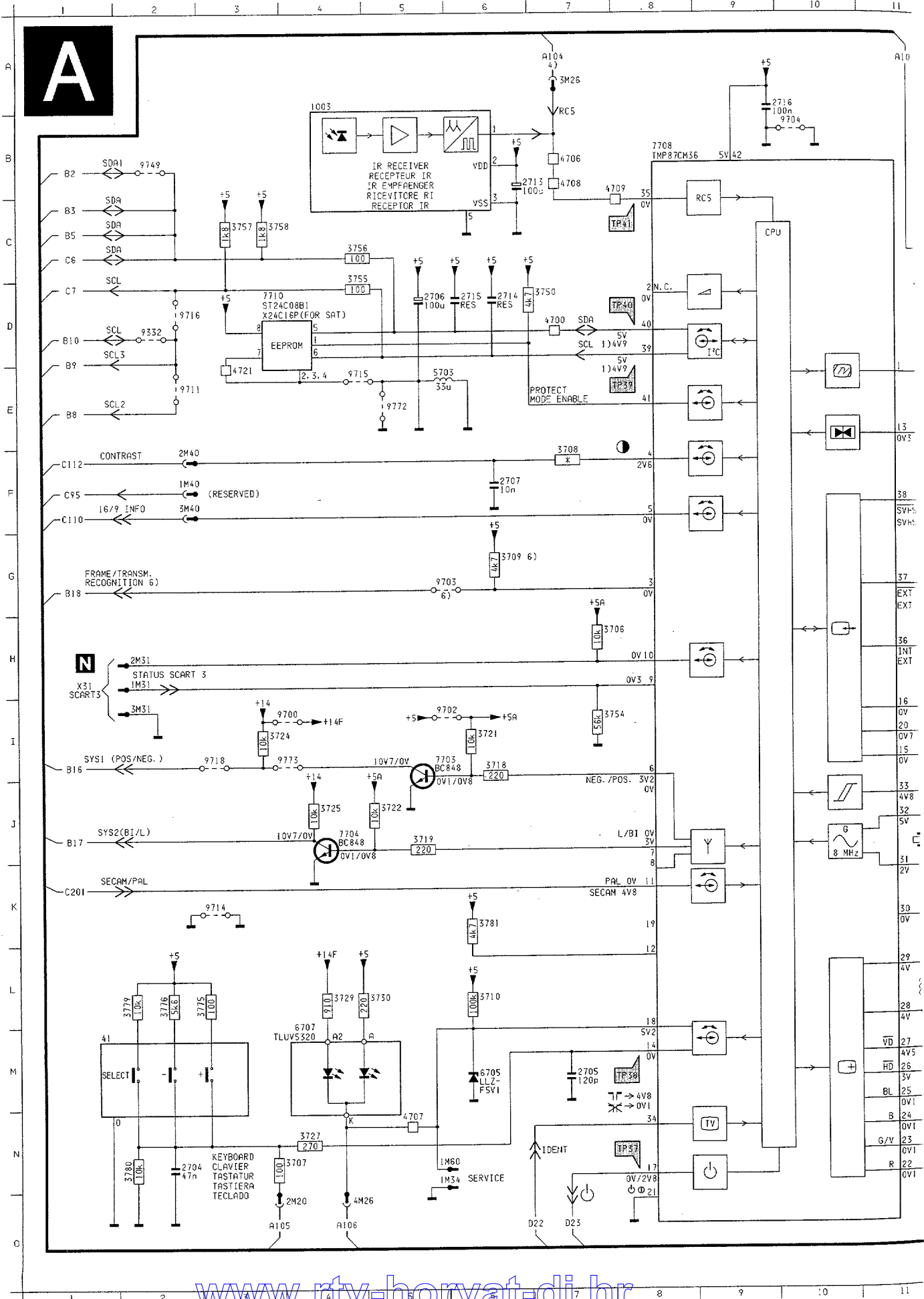
200mV/div AC
0.5ms div

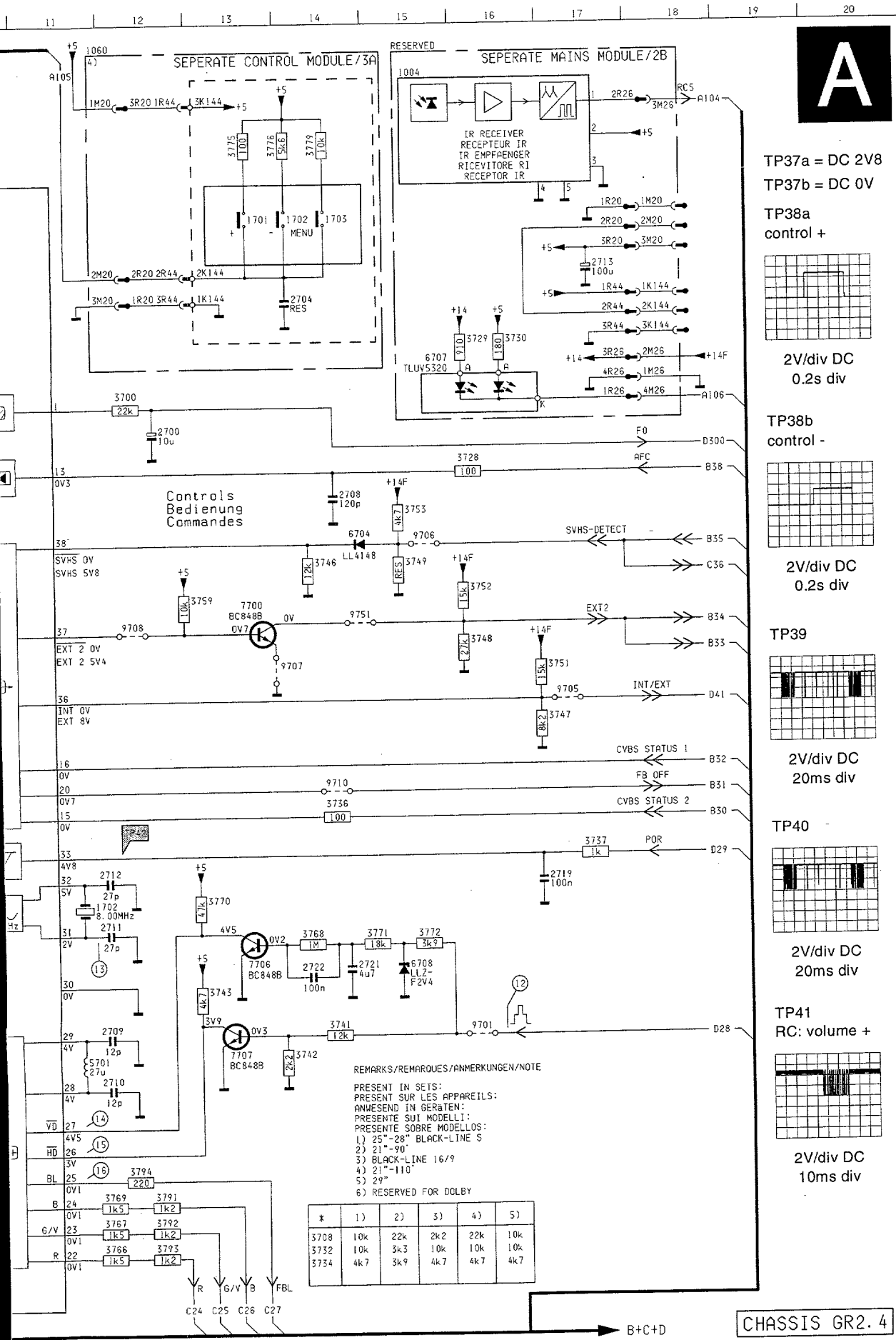
TP36



200mV/div AC
0.5ms div



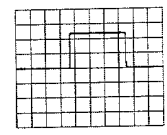




TP37a = DC 2V8

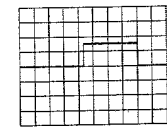
TP37b = DC 0V

TP38a control +



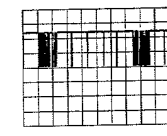
2V/div DC
0.2s div

TP38b control -



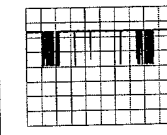
2V/div DC
0.2s div

TP39



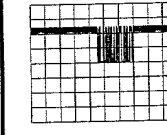
2V/div DC
20ms div

TP40



2V/div DC
20ms div

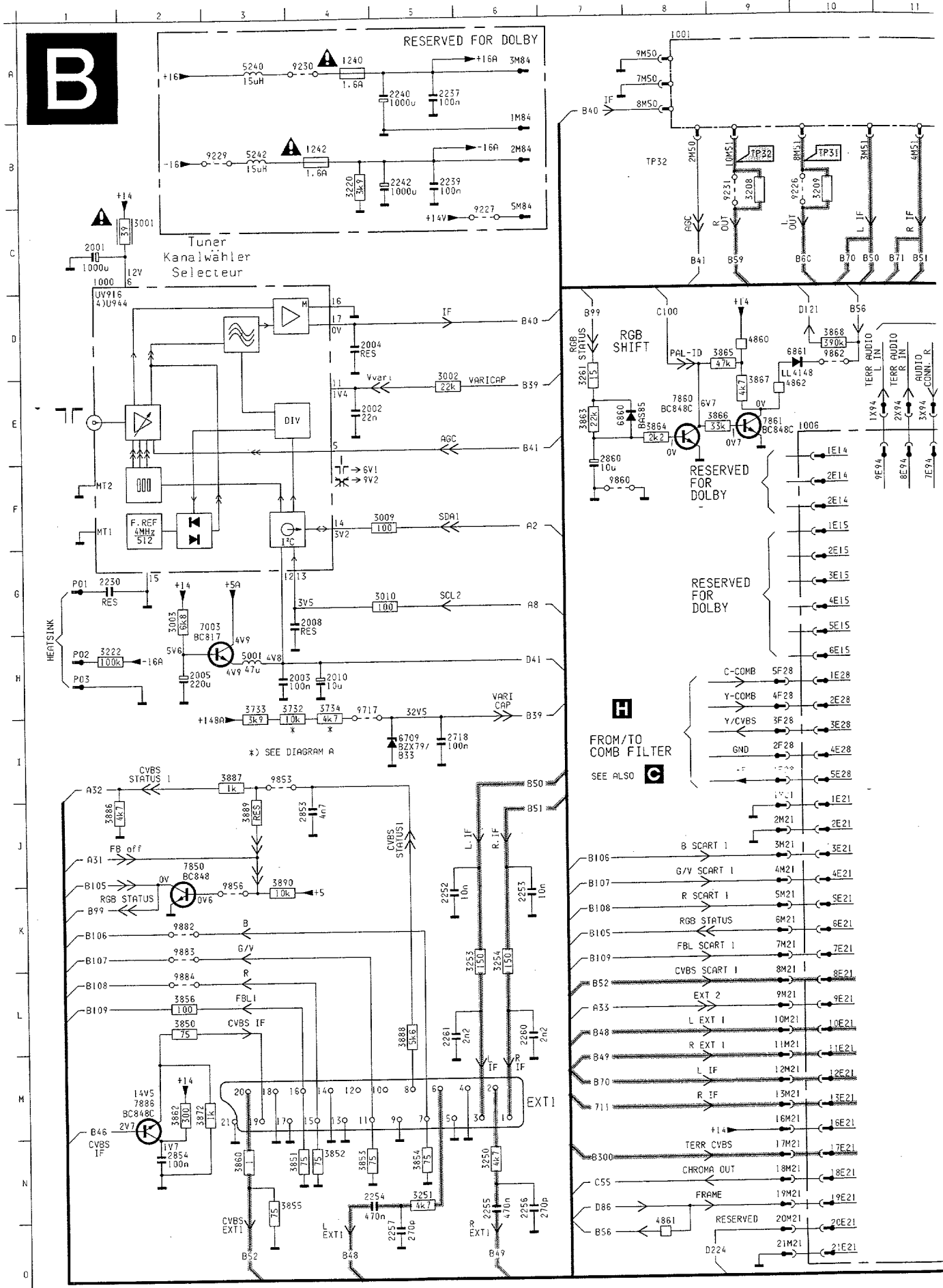
TP41 RC: volume +



2V/div DC
10ms div

1003	A 4	9714	K 3
1004	A15	9715	E 4
1050	A11	9716	D 2
1701	B13	9718	I 3
1702	B14	9749	B 2
1702	J11	9751	G14
1703	B14	9772	E 5
2700	E12	9773	I 4
2704	C14		
2704	N 2		
2705	M 7		
2706	D 5		
2707	F 6		
2708	F14		
2709	L12		
2710	L12		
2711	K12		
2712	J12		
2713	B 6		
2713	C17		
2714	D 6		
2715	D 6		
2716	A 9		
2719	J17		
2721	K14		
2722	K14		
3700	E12		
3706	H 7		
3707	N 3		
3708	F 7		
3709	G 6		
3710	L 6		
3718	I 6		
3719	J 5		
3721	I 6		
3722	J 5		
3724	I 3		
3725	J 4		
3727	N 4		
3728	E16		
3729	D16		
3729	L 4		
3730	D16		
3730	L 5		
3736	I14		
3737	J17		
3741	L14		
3742	L14		
3743	K13		
3746	F14		
3747	H17		
3748	G16		
3749	F15		
3749	F15		
3750	D 7		
3751	H17		
3752	G16		
3753	F15		
3754	I 7		
3755	D 4		
3756	C 4		
3757	C 3		
3758	C 3		
3759	G13		
3766	N12		
3767	N12		
3768	K14		
3769	N12		
3770	J13		
3771	K15		
3772	K15		
3775	B13		
3775	L 3		
3776	B14		
3776	L 2		
3779	B14		
3779	L 2		
3780	N 2		
3781	K 6		
3791	N12		
3792	N12		
3793	N12		
3794	N12		
41	M 1		
4700	D 7		
4706	B 7		
4707	N 5		
4708	B 7		
4709	B 8		
4721	E 3		
5701	L11		
5703	E 5		
6704	F14		
6705	M 6		
6707	D15		
6708	K15		
6708	K15		
7700	G13		
7703	I 5		
7704	J 4		
7706	K13		
7707	L15		
7708	B 8		
7710	D 3		
9352	D 2		
9700	I 4		
9701	L16		
9702	I 5		
9703	G 5		
9704	B10		
9705	H17		
9706	F15		
9707	I14		
9708	G12		
9710	I14		
9711	E 2		

B

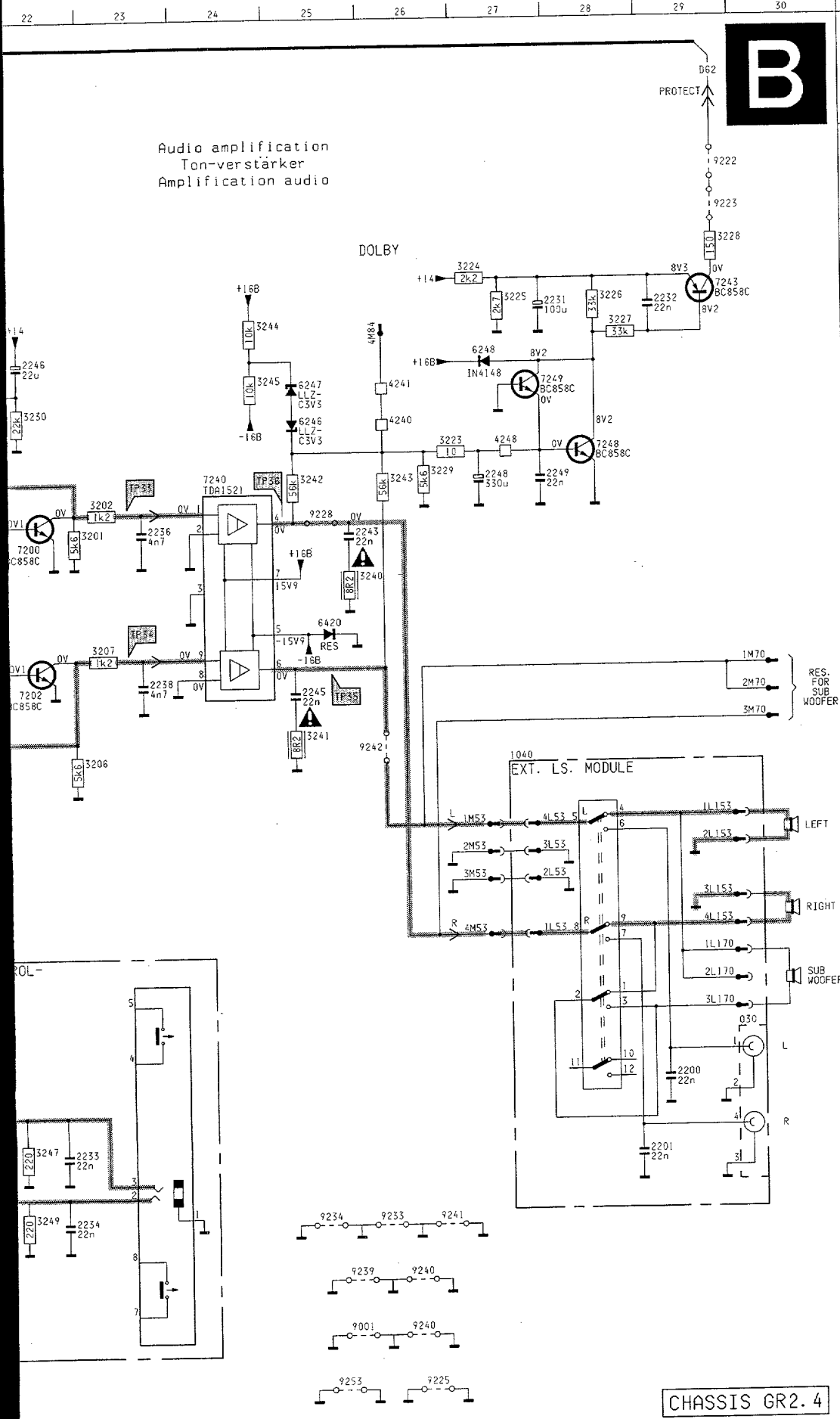


Audio amplification
Ton-verstärker
Amplification audio

DOLBY

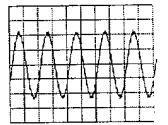
PROTECT

B



1000	C 1	3890	K 3
1001	A 8	4240	E26
1006	E10	4241	D26
1040	H27	4248	E27
1060	J20	4365	H *
1060	L16	4860	D 9
1240	A 4	4861	O 8
1242	B 4	4862	E 9
2001	C 1	5001	H 3
2002	E 4	5240	A 3
2003	H 3	5242	B 3
2004	D 4	6200	N17
2005	H 2	6201	N17
2008	G 4	6202	N17
2010	H 4	6203	N17
2200	L29	6204	G21
2200	N17	6245	E21
2201	L29	6246	E25
2203	N17	6247	D25
2230	G 1	6248	D27
2231	C28	6420	G25
2232	C29	6709	I 5
2233	L22	6860	E 7
2234	M22	6861	D10
2236	F23	7003	G 3
2237	A 5	7200	F22
2238	G23	7201	H21
2239	B 5	7202	G22
2240	A 5	7240	E24
2241	N16	7243	C29
2242	B 5	7244	D21
2243	F25	7248	E28
2245	G25	7249	D27
2246	D22	7850	J 2
2248	E27	7860	E 8
2249	K 5	7886	M 2
2252	K 6	9001	N25
2254	N 4	9200	O16
2255	N 6	9222	B29
2256	N 6	9223	B29
2257	O 5	9225	O26
2258	D13	9226	B10
2259	D14	9227	C 6
2260	L 6	9228	F25
2261	L 5	9229	B 3
2718	I 5	9230	A 4
2853	J 4	9231	B 9
2854	N 2	9233	M26
2860	F 7	9234	M25
3001	C 2	9235	B13
3002	E 5	9239	N25
3003	G 2	9240	N26
3009	F 5	9240	N26
3010	G 5	9241	M26
3200	F21	9242	H26
3200	M17	9253	O25
3201	F23	9344	G16
3202	E23	9345	G17
3202	N17	9663	B15
3203	G21	9717	H 4
3204	G20	9755	B18
3205	G21	9756	B19
3206	H23	9853	I 3
3207	G23	9856	K 3
3208	B 9	9860	F 7
3209	B10	9862	D10
3220	B 4	9882	K 2
3222	H 1	9883	K 2
3223	E26	9884	L 2
3224	C27		
3225	C27		
3226	C28		
3227	D28		
3228	C29		
3229	E26		
3230	D22		
3231	D22		
3240	F25		
3241	H25		
3242	E25		
3243	E26		
3244	C24		
3245	D24		
3246	L22		
3247	L22		
3248	M22		
3249	M22		
3250	N 6		
3251	N 5		
3253	K 6		
3254	K 6		
3261	E 7		
3732	H 3		
3733	H 3		
3734	H 4		
3850	L 2		
3851	N 3		
3852	N 4		
3853	N 4		
3854	N 5		
3855	N 3		
3856	L 2		
3860	N 3		
3862	M 2		
3863	E 7		
3864	E 8		
3865	D 9		
3866	E 9		
3867	E 9		
3868	D10		
3872	M 2		
3886	J 1		
3887	I 3		
3888	L 5		
3889	J 3		

* TP31



10mV/div AC
0.5ms div

* TP32



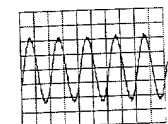
10mV/div AC
0.5ms div

* TP33



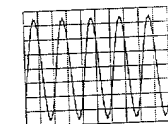
10mV/div AC
0.5ms div

* TP34



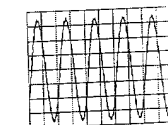
10mV/div AC
0.5ms div

* TP35



200mV/div AC
0.5ms div

* TP36



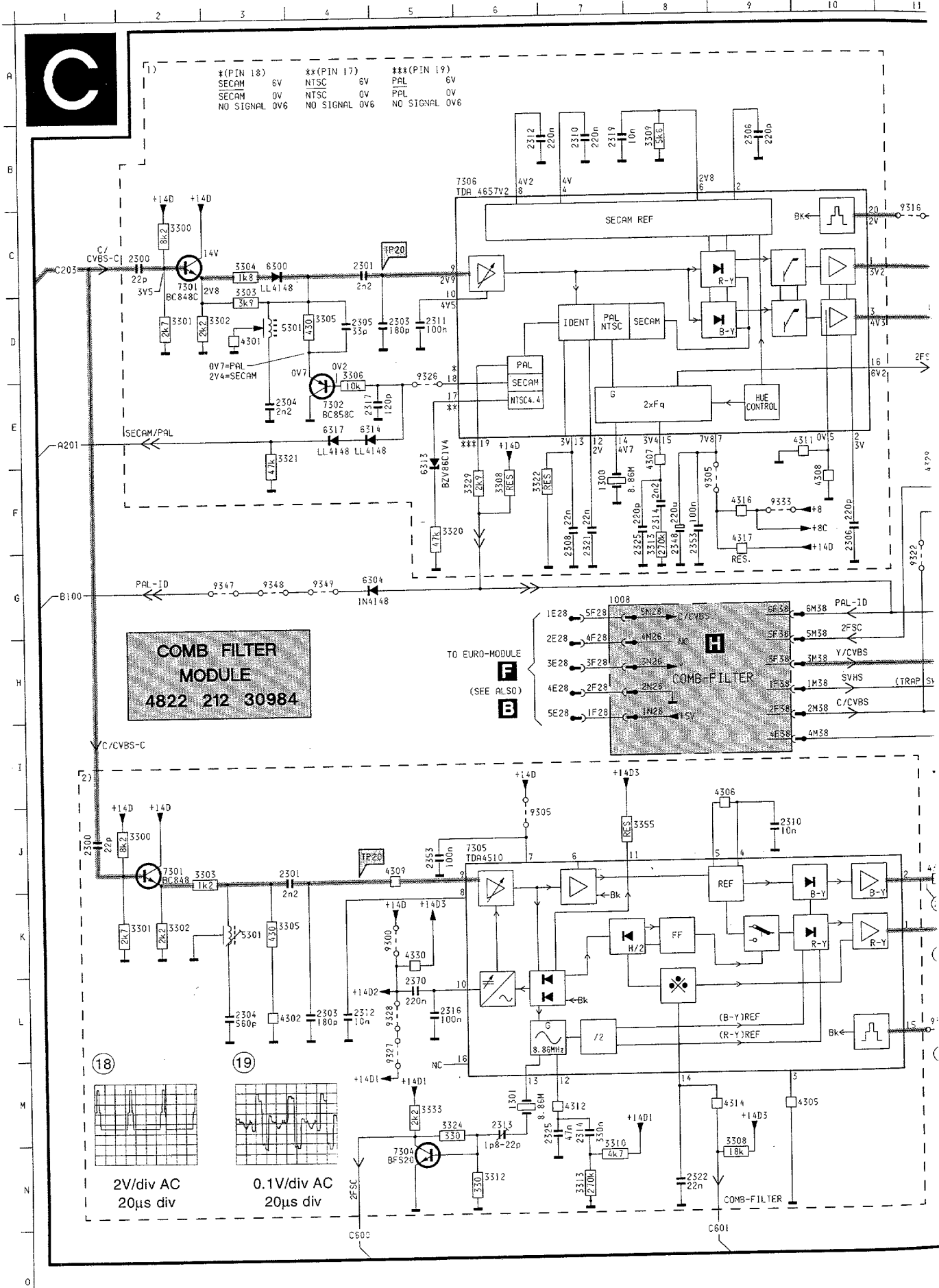
200mV/div AC
0.5ms div

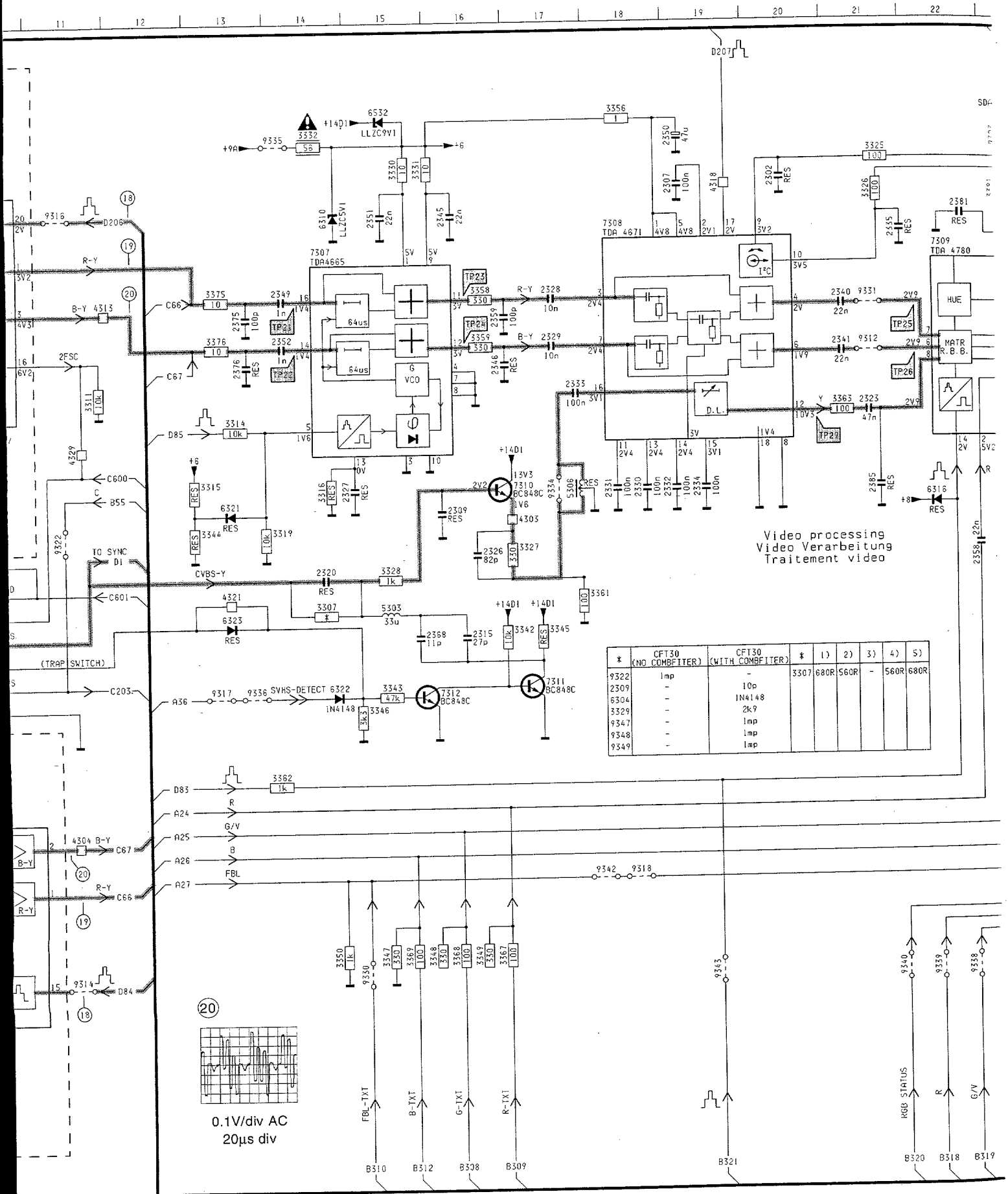
* measured at $\Delta = 50\%$

CHASSIS GR2. 4

CL46532061/014, BPAR
181094

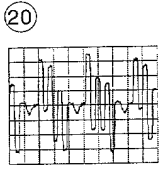
Video processing/Video Verarbeitung/

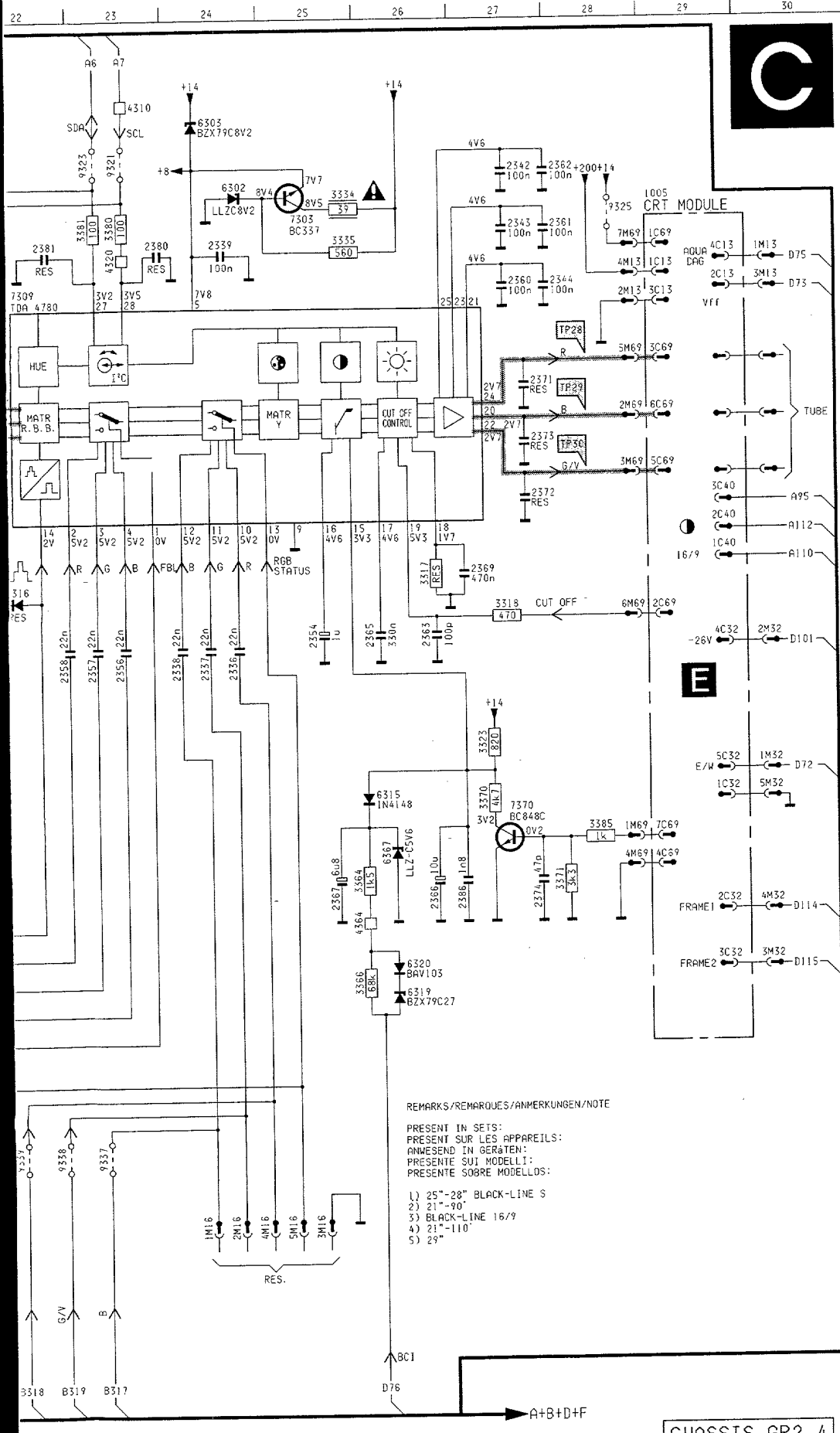




Video processing
Video Verarbeitung
Traitement video

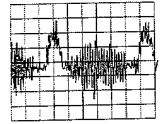
#	CF130 (NO COMBFITER)	CF130 (WITH COMBFITER)	1)	2)	3)	4)	5)
9322	1mp	-	3307	680R	560R	-	560R 680R
2309	-	10p					
6304	-	1N4148					
3329	-	2K9					
9347	-	1mp					
9348	-	1mp					
9349	-	1mp					





1005	B29	3319	G14	9328	L 5
1008	G 7	3320	F 5	9330	L15
1300	F 7	3321	E 3	9331	D21
1301	M 6	3322	F 6	9333	F 9
2300	C 2	3323	H27	9334	F17
2300	J 1	3324	M 5	9335	B14
2301	C 4	3325	B21	9336	I13
2301	J 3	3326	B21	9337	L23
2302	B20	3327	G17	9338	L22
2303	D 5	3328	G15	9339	L22
2303	L 4	3329	F 6	9340	L21
2304	E 3	3330	B15	9342	K18
2304	L 3	3331	B15	9343	L19
2305	D 4	3332	B14	9347	G 3
2306	B 9	3333	M 5	9348	G 3
2306	F10	3334	B25	9349	G 4
2307	B19	3335	C25		
2308	F 7	3342	H17		
2309	F16	3343	I15		
2310	B 7	3344	G13		
2310	J 9	3345	H17		
2311	D 5	3346	I15		
2312	B 6	3347	L15		
2312	L 4	3348	L16		
2313	M 6	3349	L16		
2314	M 7	3350	L14		
2314	M 7	3355	J 7		
2315	H16	3356	A18		
2316	L 5	3358	D16		
2317	E 4	3359	D16		
2319	B 7	3361	G18		
2320	G14	3362	J14		
2321	F 7	3363	E21		
2322	N 8	3364	I26		
2323	E21	3366	J28		
2325	F 8	3367	L16		
2325	M 6	3368	L16		
2326	G16	3369	L15		
2327	F15	3370	H27		
2328	D17	3371	I28		
2329	D17	3375	D13		
2330	F18	3376	D13		
2331	F18	3380	B23		
2332	F19	3381	B23		
2333	E17	3385	I28		
2334	F19	4301	D 3		
2335	C21	4302	L 3		
2336	G24	4303	F17		
2337	G24	4304	J11		
2338	G24	4305	M 9		
2339	C24	4306	I 9		
2340	D21	4307	F 8		
2341	D21	4308	F10		
2342	B27	4309	J 5		
2343	B27	4310	A23		
2344	C28	4311	E10		
2345	C16	4312	M 7		
2346	E16	4313	D11		
2348	F 8	4314	M 8		
2349	D14	4316	F 9		
2350	B19	4317	F 9		
2351	C15	4318	B19		
2352	D14	4320	C23		
2353	F 8	4321	G13		
2353	J 5	4329	F11		
2354	G25	4330	K 5		
2355	G23	4364	J26		
2357	G23	5301	D 3		
2358	G22	5301	K 3		
2359	D16	5303	H15		
2360	C27	5306	F17		
2361	B28	6300	C 3		
2362	B28	6302	B24		
2363	G26	6303	A24		
2365	G26	6304	G 4		
2366	I26	6310	C14		
2367	I25	6313	F 5		
2368	H15	6314	E 4		
2369	F27	6315	H26		
2370	L 5	6316	F22		
2371	D27	6317	E 4		
2372	E27	6319	J26		
2373	E27	6320	J26		
2374	I27	6321	F13		
2375	D13	6322	I14		
2376	E13	6323	H13		
2380	C23	6367	I26		
2381	C22	6532	A15		
2385	F21	7301	C 2		
2386	I27	7301	J 2		
3300	C 2	7302	E 4		
3300	J 2	7303	B25		
3301	D 2	7304	N 5		
3301	K 2	7305	J 5		
3302	D 3	7306	B 5		
3302	K 2	7307	C14		
3303	D 3	7308	C18		
3303	J 2	7309	C22		
3304	C 3	7310	F17		
3305	D 4	7311	I17		
3305	K 3	7312	I16		
3306	E 4	7370	I27		
3307	H14	9300	K 5		
3308	F 6	9305	F 8		
3308	N 9	9305	J 6		
3309	B 8	9312	D21		
3310	N 7	9314	L11		
3311	E11	9316	C11		
3312	N 6	9317	I13		
3313	G 8	9318	K18		
3313	N 7	9321	B23		
3314	E13	9322	G11		
3315	F13	9323	B23		
3316	F14	9325	B28		
3317	F26	9326	E 5		
3318	F27	9327	L 5		

TP20



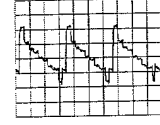
20mV/div AC
10µs div

TP26



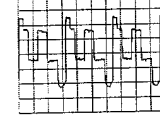
0.2V/div AC
20µs div

TP27



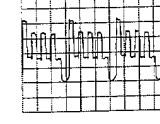
0.1V/div AC
20µs div

TP28



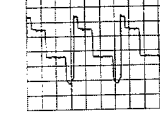
0.5V/div AC
20µs div

TP29



0.5V/div AC
20µs div

TP30



0.5V/div AC
20µs div

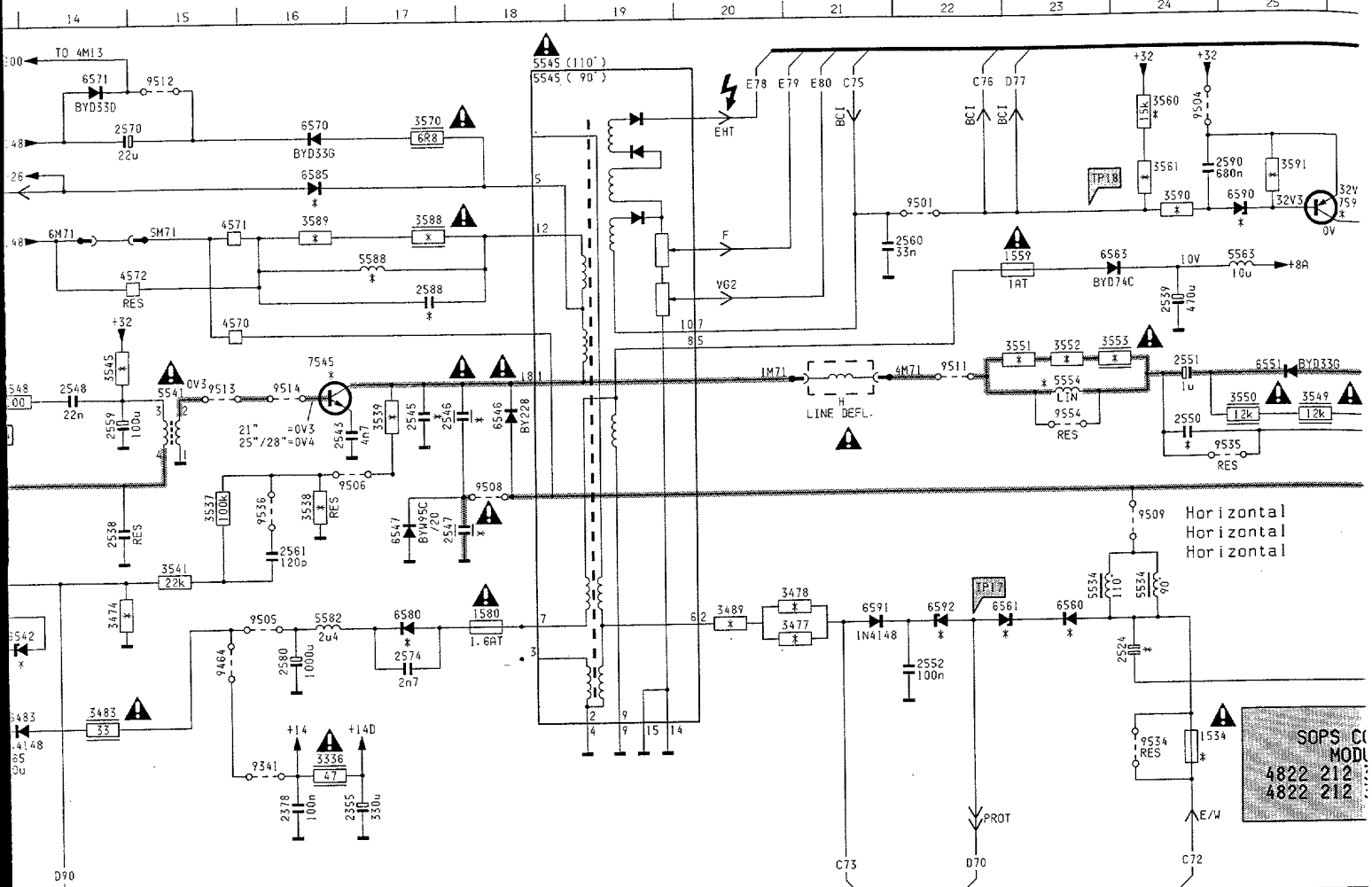
REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:
 PRESENT SUR LES APPAREILS:
 ANWESEND IN GERÄTEN:
 PRESENTE SUI MODELLI:
 PRESENTE SOBRE MODELOS:

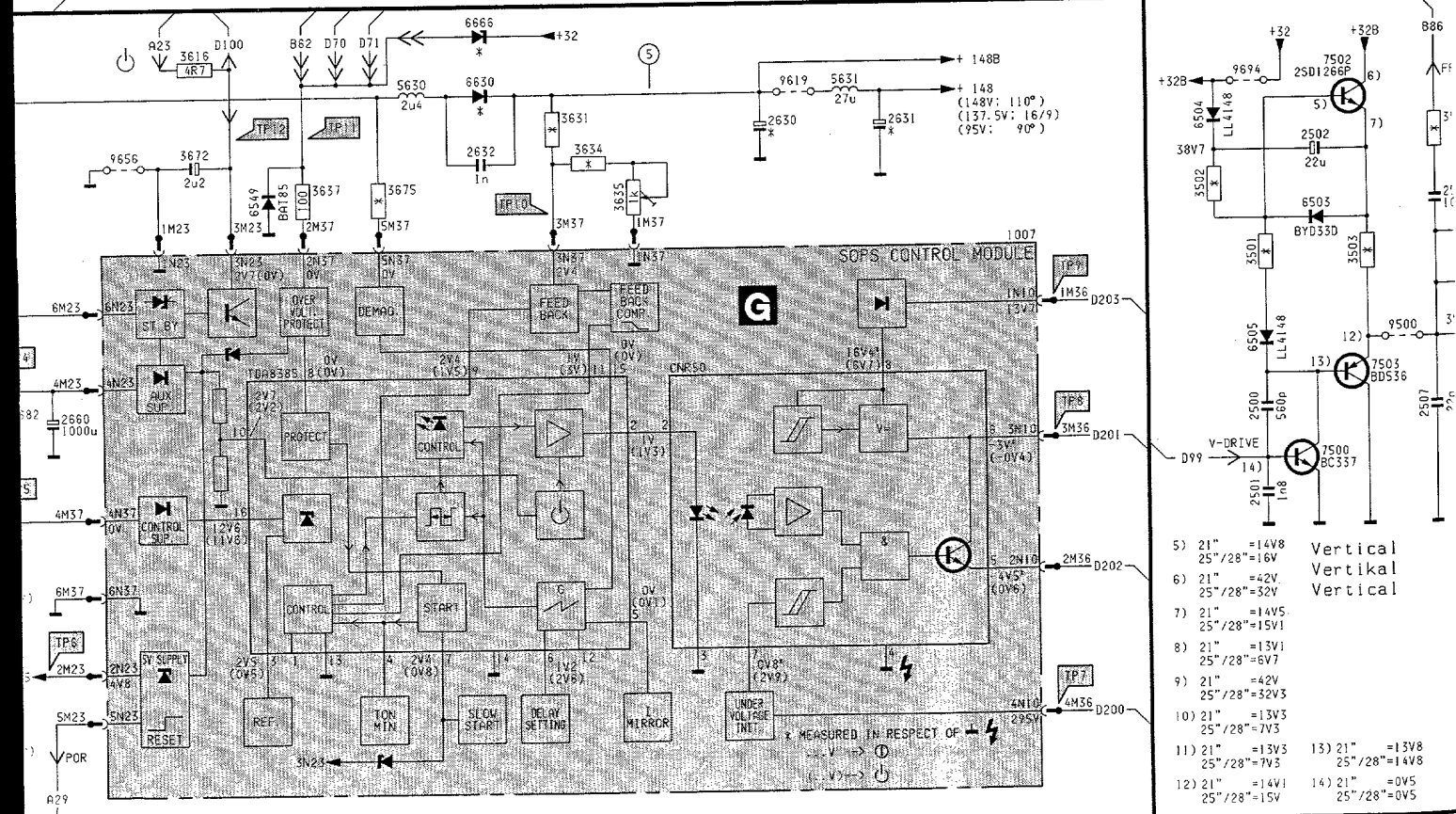
- 1) 25"-28" BLACK-LINE S
- 2) 21"-30"
- 3) BLACK-LINE 16/9
- 4) 21"-110"
- 5) 29"

CHASSIS GR2.4

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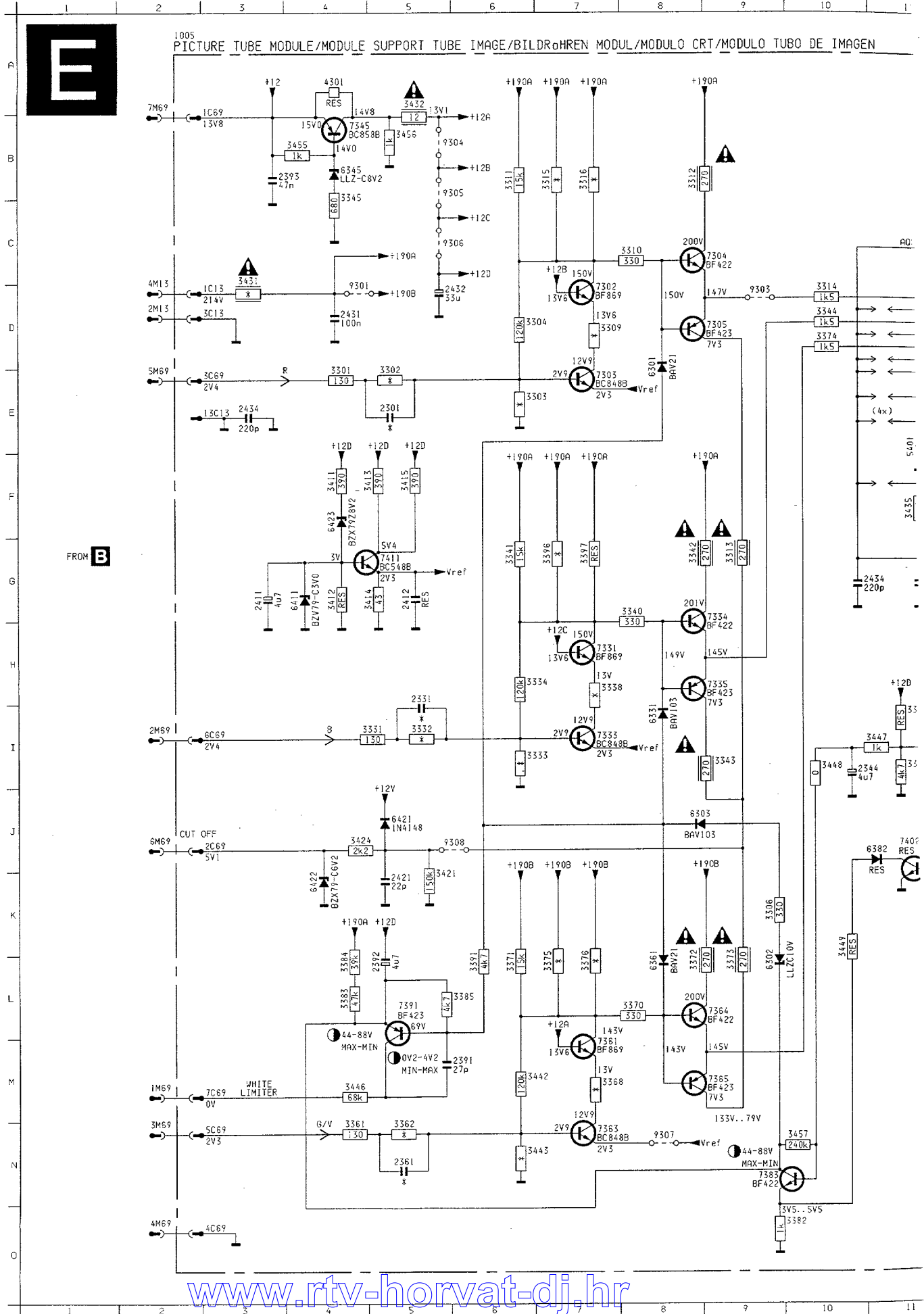


SOPS CONTROL MODULE
4822 212
4822 212



- 5) 21" = 14V8
25" / 28" = 16V
- 6) 21" = 42V
25" / 28" = 32V
- 7) 21" = 14V5
25" / 28" = 15V1
- 8) 21" = 13V1
25" / 28" = 6V7
- 9) 21" = 42V
25" / 28" = 32V3
- 10) 21" = 13V3
25" / 28" = 7V3
- 11) 21" = 13V3
25" / 28" = 7V3
- 12) 21" = 14V1
25" / 28" = 15V
- 13) 21" = 13V8
25" / 28" = 14V8
- 14) 21" = 0V5
25" / 28" = 0V5

Picture tube panel/Bildröhren platte/Platine TRC



www.rtv-horvat-dj.hr



MAGEN

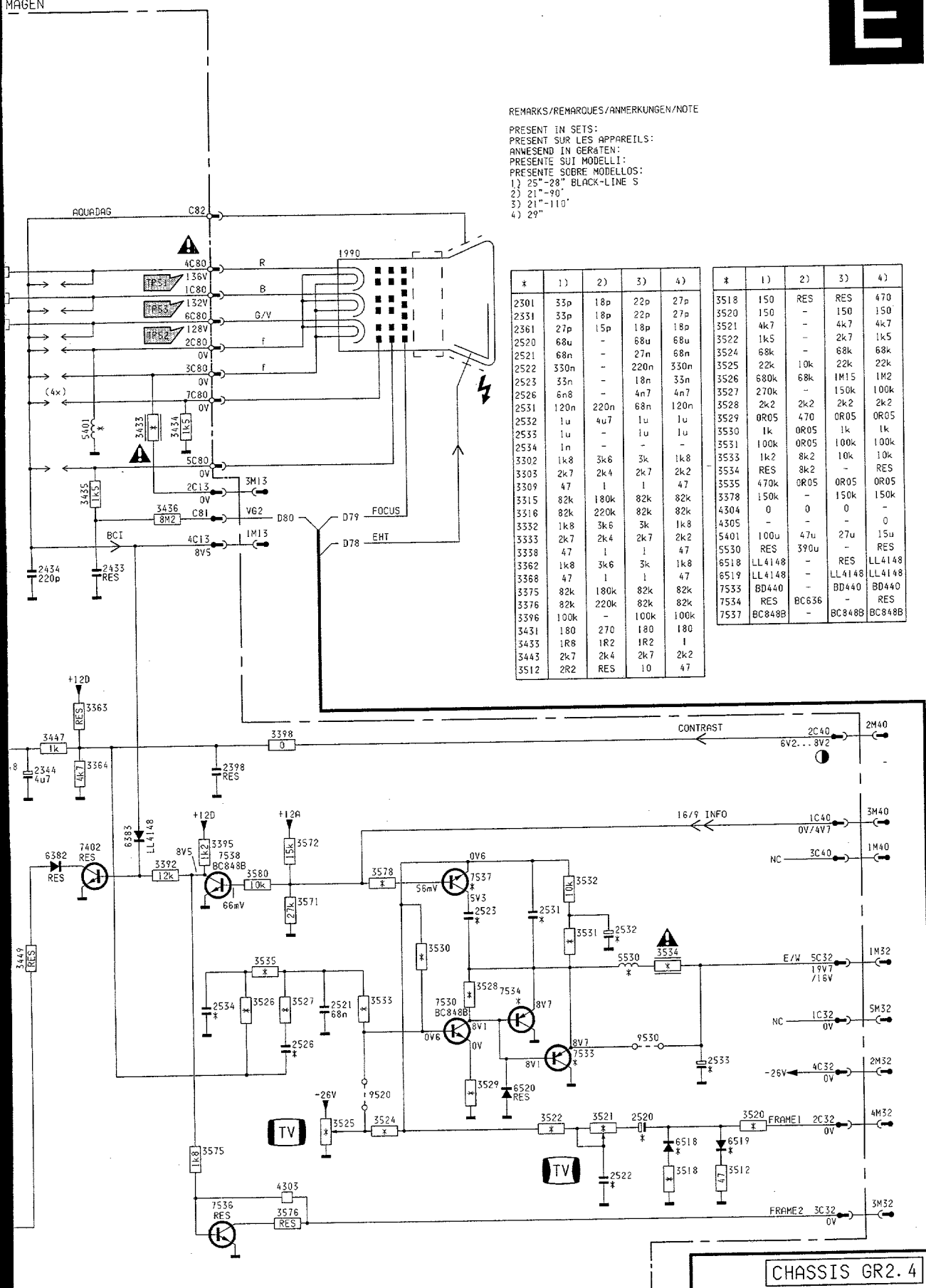
REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:
PRESENT SUR LES APPAREILS:
ANWESEND IN GERÄTEN:
PRESENTE SUI MODELLI:
PRESENTE SOBRE MODELOS:

- 1) 25"-28" BLACK-LINE S
2) 21"-90"
3) 21"-110"
4) 29"

Table with 5 columns: *, 1), 2), 3), 4). It lists various electronic components and their values for different model variants.

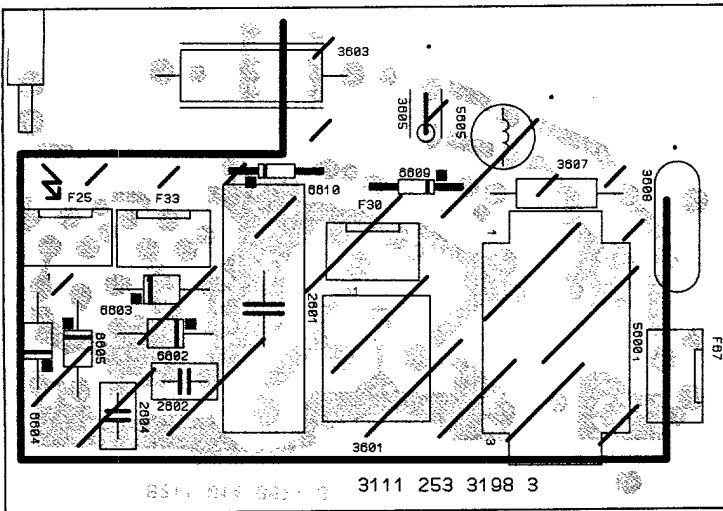
Table with 5 columns: *, 1), 2), 3), 4). It lists various electronic components and their values for different model variants.



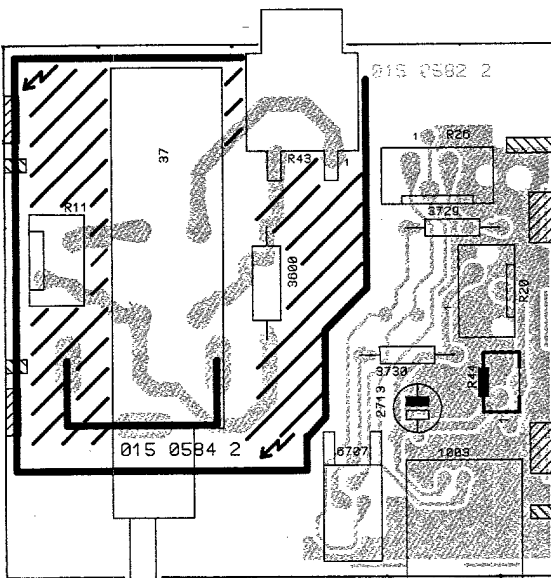
- 1005 A 2 3580 K13
1990 D14 4301 A 4
2301 E 5 4303 N13
2331 H 5 5401 E11
2344 I10 5530 L17
2361 N 5 6301 D 8
2391 M 5 6302 L 9
2392 L 5 6303 J 8
2393 B 3 6331 I 8
2398 I13 6345 B 4
2411 G 3 6361 L 8
2412 G 5 6382 J11
2421 K 5 6383 J11
2431 D 4 6411 G 4
2432 D 5 6421 J 5
2433 G12 6422 K 4
2434 E 3 6423 F 4
2434 G11 6518 N18
2520 M17 6519 N18
2521 L14 6520 M16
2522 N17 7302 D 7
2523 K15 7303 C 7
2526 M13 7304 C 9
2531 K16 7305 D 9
2532 K17 7331 H 7
2534 L12 7333 I 7
3301 E 4 7334 H 9
3302 E 5 7335 H 9
3303 E 6 7345 B 4
3304 D 6 7361 M 7
3306 K 9 7363 N 7
3309 D 7 7364 L 9
3310 C 8 7365 M 9
3311 B 6 7368 N 9
3312 B 8 7391 L 5
3313 G 9 7402 J11
3314 D10 7411 G 5
3315 B 7 7530 L15
3316 B 7 7533 M16
3331 I 5 7534 L16
3332 I 5 7536 N12
3333 I 6 7537 K15
3334 H 6 7538 J12
3338 H 7 9301 D 4
3340 G 8 9301 D 5
3341 G 6 9303 D 9
3342 G 8 9304 B 5
3343 I 9 9305 B 5
3344 D10 9306 C 5
3345 B 4 9307 N 8
3361 N 4 9308 J 5
3362 N 5 9309 O 3
3363 I11 9530 L17
3368 M 7
3370 L 8
3371 L 6
3372 L 8
3373 L 9
3374 D10
3375 L 7
3376 L 7
3382 O 9
3383 L 4
3384 L 4
3385 L 6
3391 L 6
3392 J12
3395 J12
3396 G 7
3397 G 7
3398 I13
3411 F 4
3412 G 4
3413 F 5
3414 G 5
3415 F 5
3421 J 5
3424 J 4
3431 D 3
3432 A 5
3433 E12
3434 E12
3435 F11
3436 F12
3442 M 6
3443 N 6
3446 M 4
3447 I11
3448 I10
3449 K10
3455 B 4
3456 B 5
3457 N10
3512 N18
3518 N18
3520 M18
3521 M17
3522 M16
3524 M14
3525 M14
3526 L13
3527 L13
3528 L15
3529 M15
3530 K15
3531 K17
3532 K17
3533 L14
3534 L18
3535 L13
3571 K13
3572 J13
3575 N12
3576 N13
3578 K14

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CL46532061/017. EPAR
141094

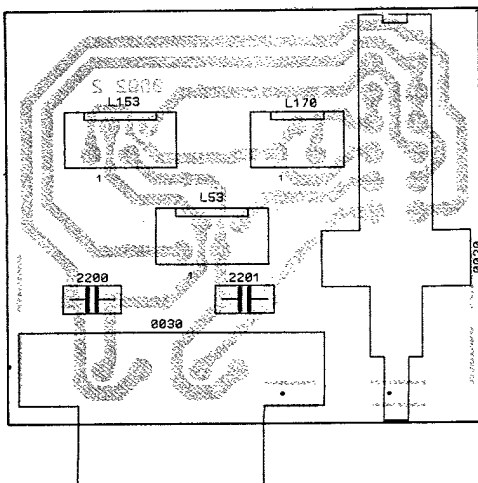
1002 MAINS FILTER MODULE



1050 SEPARATE MAINS MODULE



1040 EXTERNAL LOUDSPEAKER MODULE



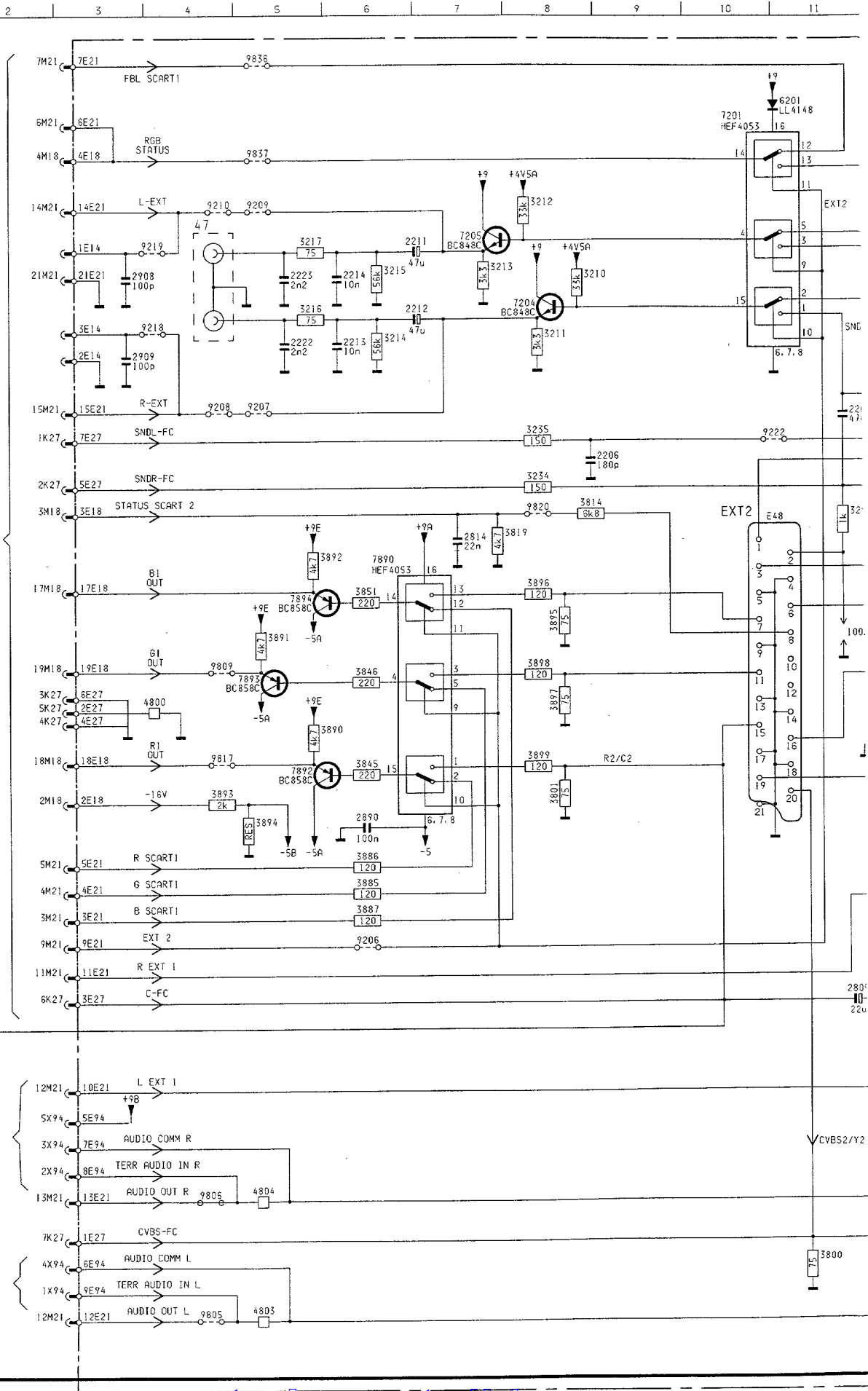
F1

FROM B

FROM N

FROM B

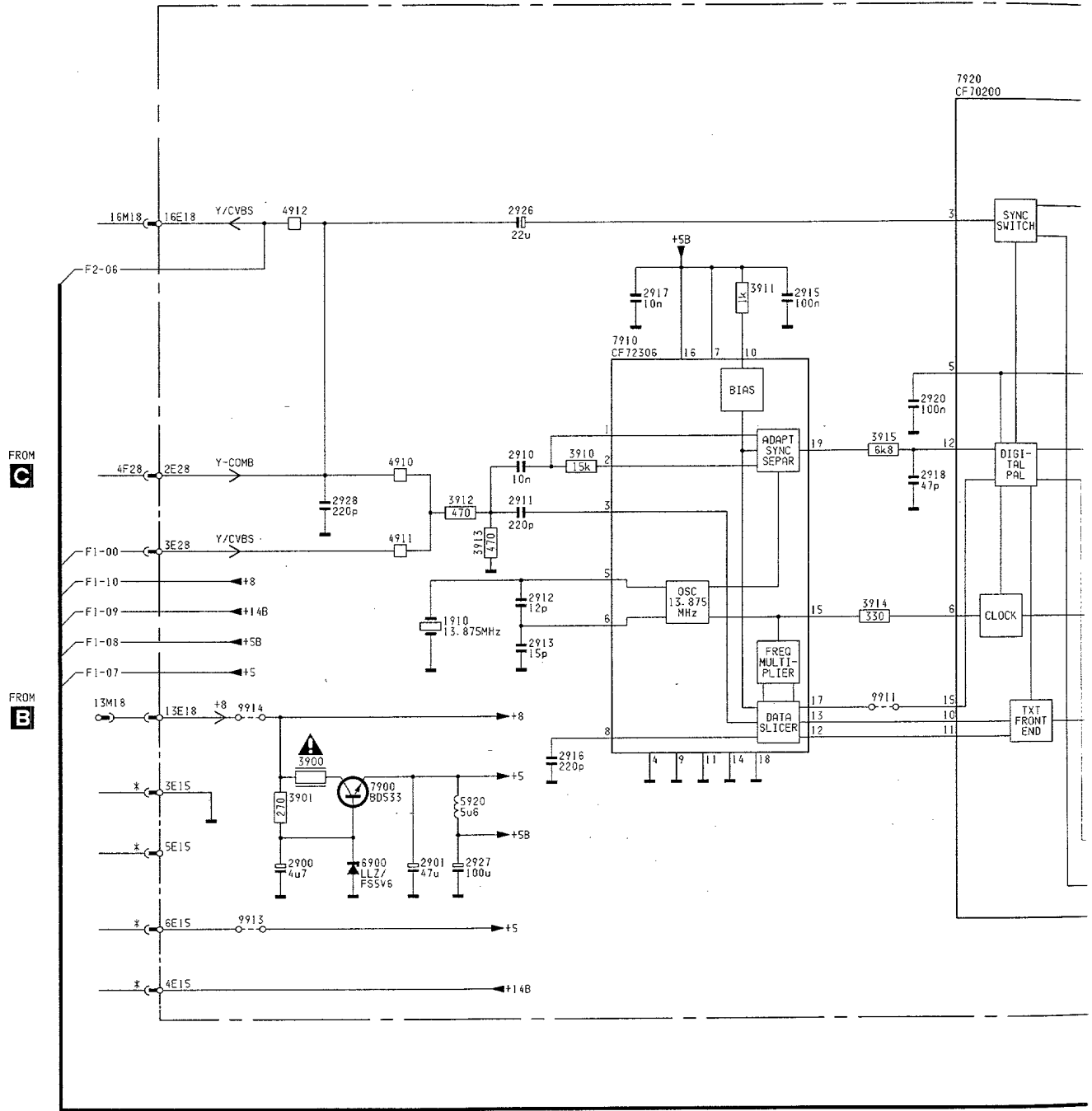
FROM N



Teletext

F2

* RESERY



Teletext

The TXT-decoder is integrated in the Euro-module.

The TXT-decoder can process the following systems:

- World Teletext System (WST)
- BBC system: FLOF (full level one feature)
- German system: TOP (table of Pages).

The TXT-decoder has a memory of 8 pages with the objective to decrease the waiting time.

The content of the memory depends on the system.

- * WST with pages without sub-codes: page -1, +1, +2, +3, +4, page last received, table of contents + page displayed.
- * WST with pages with sub-codes: page -1, +1, +2, next sub-page, next +1 sub-page, page last received + table of contents.
- * FLOF: 4 pages linked to the coloured buttons (red, green, yellow, blue) page -1, page last displayed and table of contents.
- * TOP: basic Top table, page +1, 1 or 2 subsequent group, 2 or 3 subsequent blocks, or page +1, +2.

The 'Page Look Up Table' (PLUT) is built up immediately in the 3 systems after switch-on.

The Plut ensures that only the transmitted pages are stored in the memory.

The TXT circuit consists of 2 ICs:

- IC 7910: Teletext Data Slicer: CF 72306.
- IC 7920: Universal Teletext Decoder: 'Eurotext': CF 70200.

The Teletext Data Slicer: CF 72306

The CF 72306 IC sees to:

- Sync. separation
- Teletext data processing
- Data clock regeneration
- Transfer of clock, data and composite sync. signals to the digital IC teletext decoder.

The sync. separator slicing level is adjustable, so that it can process a whole series of video amplitudes and disturbed signals.

The data slicer uses an adjustable signal recognition and clock phase algorithm, so that it can work in a broad area of clock run-in amplitudes.

- The IC has 3 video inputs (pins 1, 2, 3). Pins 1, 2 are used for sync. processing and pin 3 is used for taking TXT information from the video.

Resistor 3910 forms LPF (Low Pass Filter) with capacity in the IC for the removal of the high frequencies at the sync. level.

Resistors R 3912, R 3913 are adaptations of the level from 2V to 1V pp.

The TXT clock of 6.937MHz is conducted from the 13.875MHz oscillator frequency. The black level is stocked on pin 8 (C REF) via C 2916.

The frequency is raised to 69MHz via a 'Frequency multiplier', to enable the processing of all signals in the IC.

The 'OSCOUT' (pin 15) transfers the 13.876 MHz to the TXT-decoder.

R 3914 is present in order to avoid irradiation in the MF part. During the VBi the data slicer is activated via 'WIND', so that the TXT data can come out on pin 13.

The sync. signal (pin 19) is sent to pin 12 TXT decoder via LDF filter (R 3915, C 2918).

Universal Teletext decoder 'Eurotext': CF 70200

Digital IC for the benefit of decoding the world standard systems:

- 8 pages of memory
- automatic detection of WST, FLOF, or TOP
- Packet 26 flicker-free character processing.

The TDATA, T.CIK and composite sync. of the data slicer are offered to inputs 10, 11 and 12.

The IC is connected to the I²C line via 16 (data) and 17 (clock).

Via Flag 2 (28) the NIL signal is offered to prevent the text from flickering on the screen.

The Reset is effected via C 2920 on pin 5.

Via diodes 6920, 6921, 6922 the RGB outputs are transmitted to the TDA 4780 together with the blanking signal (pin 19).

The diodes prevent 'blooming' of the text, as well as the level of the OSD being pulled down.

The amplitude of the output signals is determined by C 2925 (REF) and R 3925 (RGB set).

Pin 2 (sync. out of CSB) is the output of the internal switch, which transmits either the composite sync. signal of the internal sync. generator or the video input inlet when picture information is shown (mixed mode - subtitling).

Via the clock in (pin 6) 13.876 MHz is received from the data slicer.

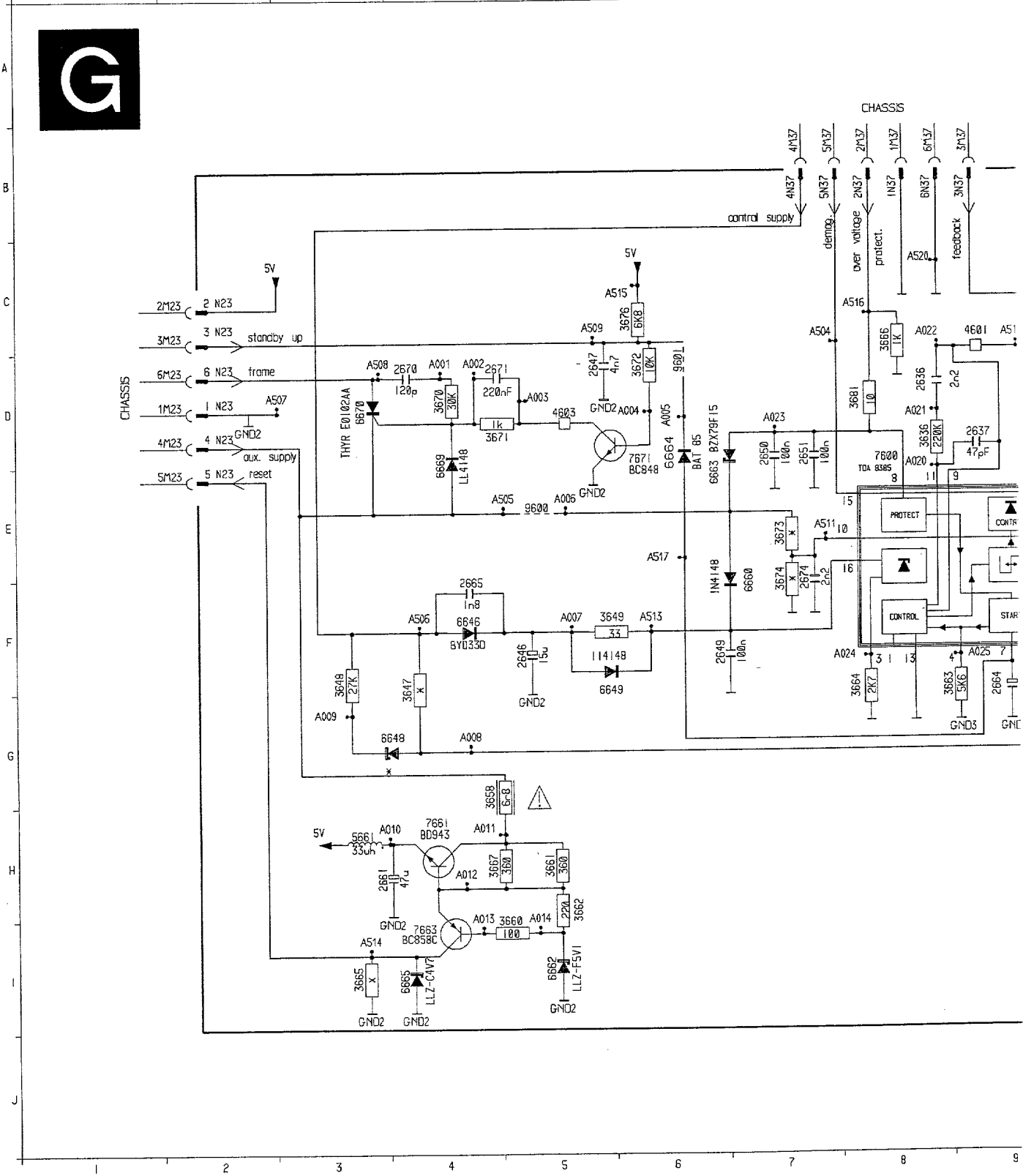
Via PLL the pulses in the TXT-decoder are synchronized to the sync. of the video signal.

Character generator is available in the IC.

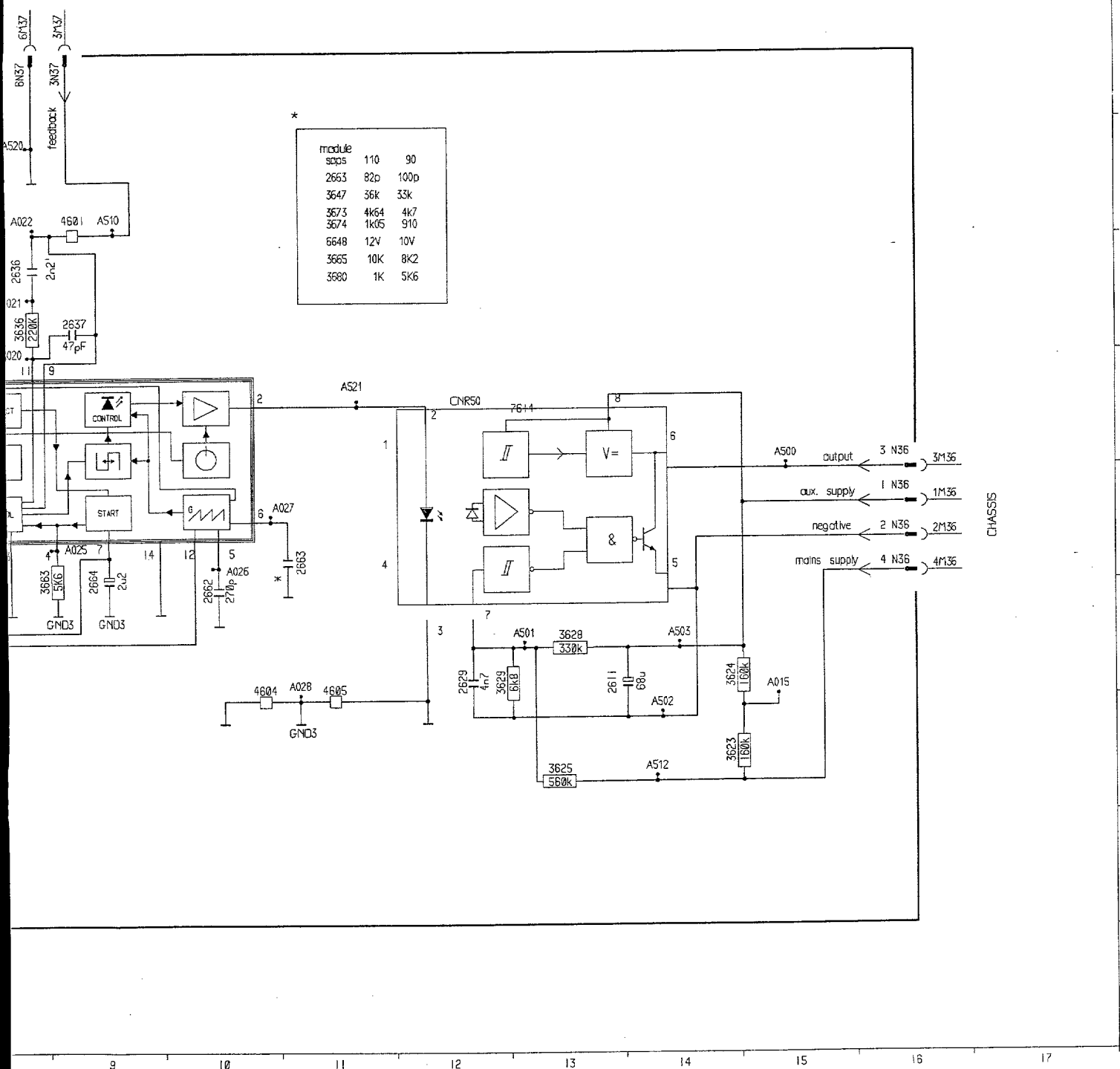
The internal ROM controls the decoding and the choice of the display.

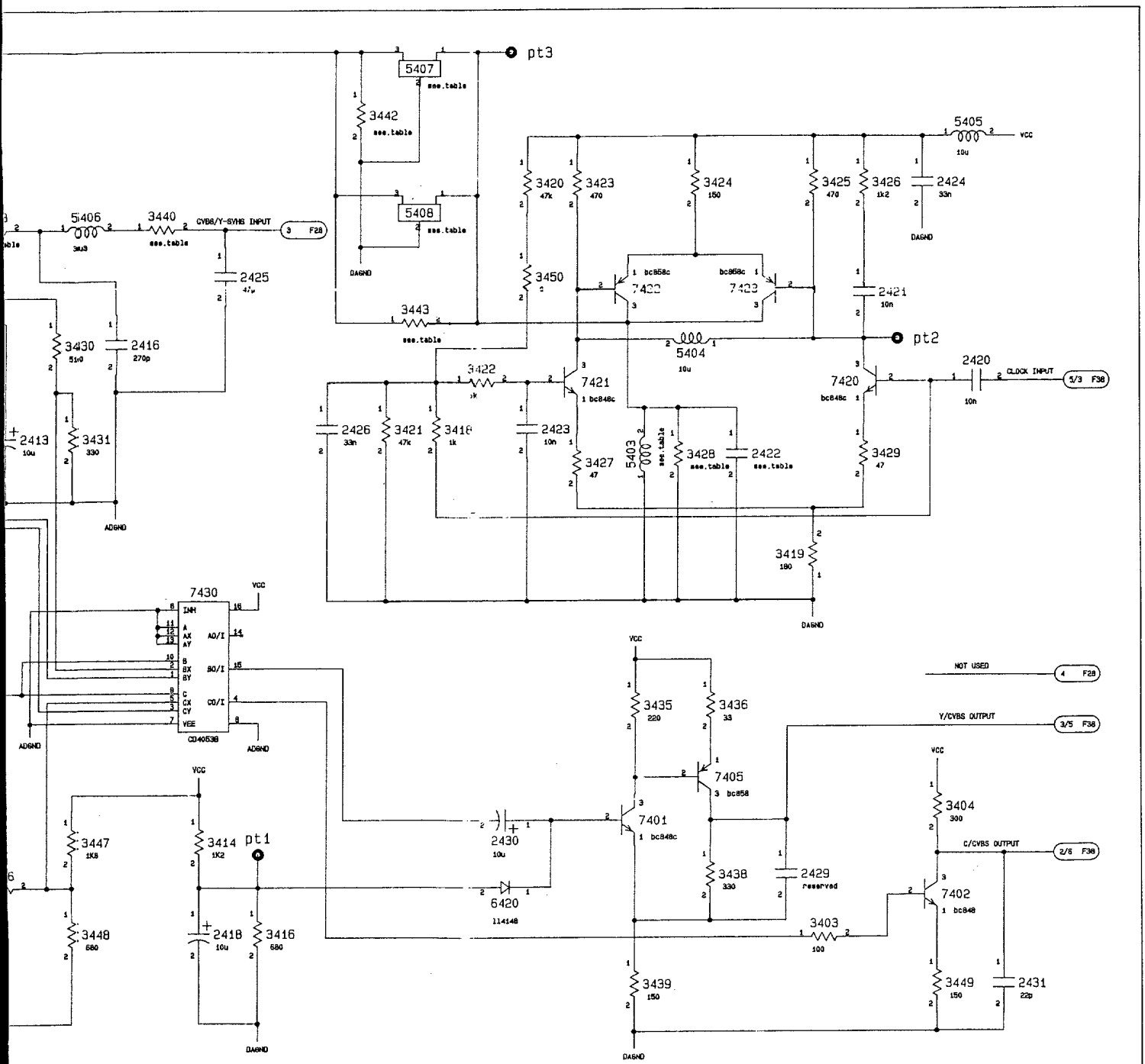
In the internal RAM 8 pages can be stored.

2611	G10	2647	2662	G10	2671	D 4	3628	G13	3649	F 5	3663	F 8	3670	D 4	3676	C 6	4604	G10	6649	G 5	6665	I 4	7651	H 4	A2
2629	G10	2649	2663	G11	2674	F 7	3629	D 13	3650	F 8	3664	F 8	3671	D 4	3680	I 10	4605	G11	6660	F 7	6669	D 4	7653	I 4	A2
2636	D 10	2650	2664	H 3	2675	H 4	3630	D 13	3658	F 8	3665	I 3	3672	D 6	3681	D 8	5661	H 3	6662	F 5	6670	D 3	7671	D 3	A2
2637	F 10	2651	2665	H 3	2676	G 4	3647	D 13	3651	H 5	3666	C 8	3673	F 7	4601	C 9	6646	F 4	6663	F 6	7600	D 8	9620	D 8	A2
2646	F 10	2661	2670	H 3	2625	H 3	3648	D 13	3652	H 5	3667	H 4	3674	F 7	4603	D 5	6648	G 4	6664	D 6	7614	E 4	9621	D 8	A2



7661	H 4	A001	D 4	A006	F 5	A011	H 4	A020	F 9	A501	G 13	A506	F 4	A511	E 7	A516	C 8	A521	E 11	N23	E 2	N36	F 16	N37	B 7
7663	H 4	A002	D 4	A007	F 5	A012	H 4	A021	F 9	A502	H 14	A507	D 3	A512	H 14	A517	E 6	A522	D 2	N23	D 2	N36	B 8	N37	B 8
7671	H 4	A003	D 4	A008	F 5	A013	H 4	A022	F 9	A503	G 14	A508	D 3	A513	F 6	A518	I 10	N23	C 2	N23	C 2	N36	B 8	N37	B 8
8600	H 4	A004	D 4	A009	F 5	A014	H 4	A023	F 9	A504	C 7	A509	C 5	A514	I 3	A519	I 10	N23	C 2	N23	C 2	N36	B 8	N37	B 8
8601	H 4	A005	D 4	A010	F 5	A015	H 4	A024	F 9	A505	E 5	A510	C 9	A515	C 6	A520	C 8	N23	C 2	N23	C 2	N36	B 8	N37	B 8





CONNECTOR F38

12 NC NUMBER

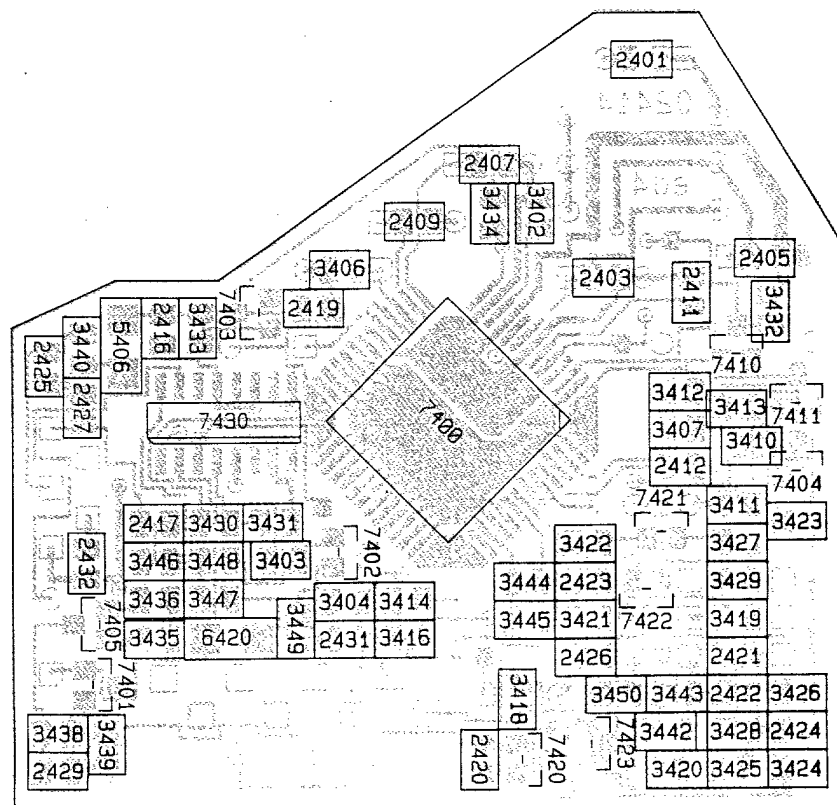
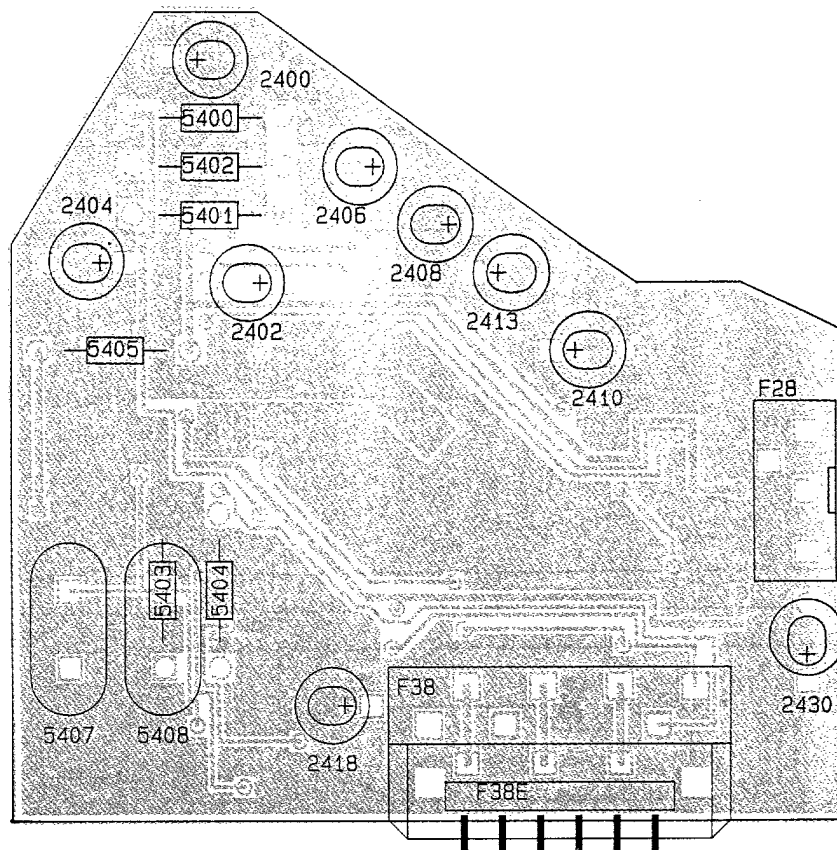
standar ver / overseas ver

- 6 5 4 3 2 1 -

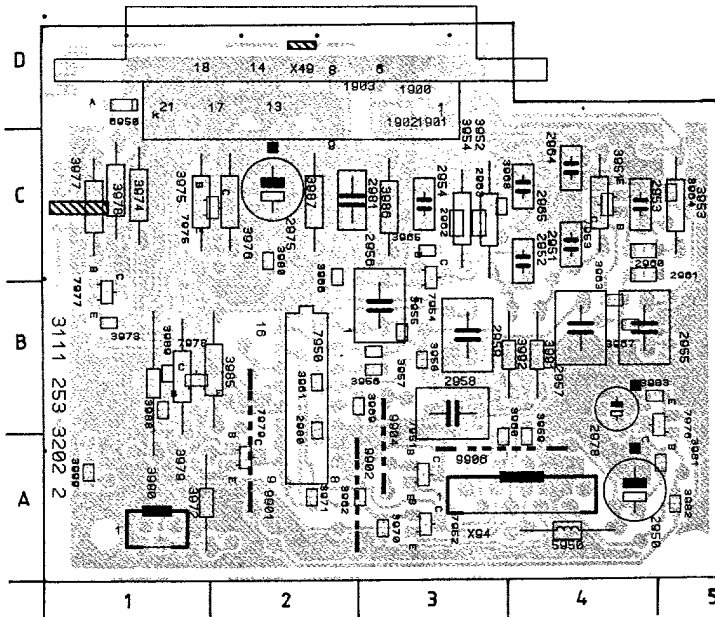
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3111 258 02000

3111 258 00250



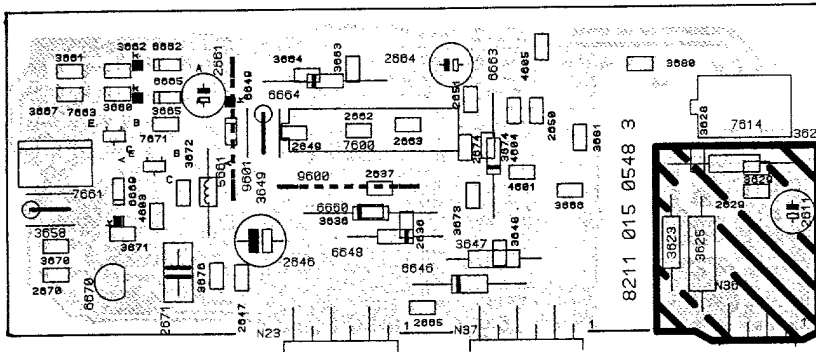
Third scart module 1006



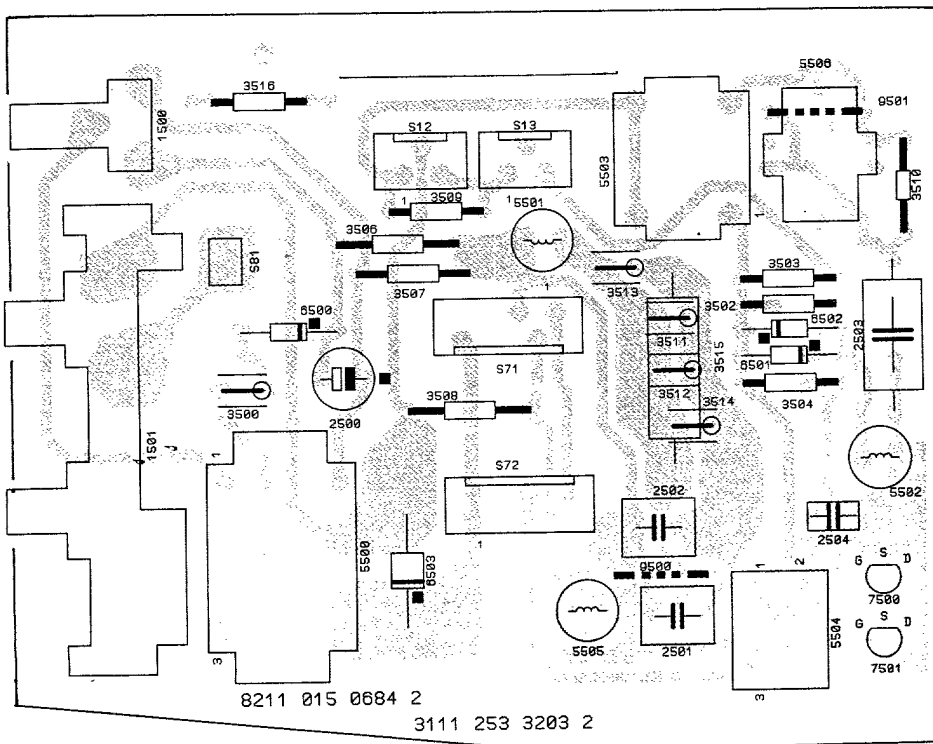
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| 1900 D3 | 3962 A3 | 7953 C4 |
| 1901 D3 | 3963 B4 | 7954 C2 |
| 1902 D3 | 3964 C5 | 7975 C2 |
| 1903 D3 | 3965 C3 | 7976 B5 |
| 2950 A4 | 3966 C2 | 7977 B1 |
| 2951 C4 | 3967 B4 | 7978 B2 |
| 2952 C4 | 3968 C4 | 7979 A2 |
| 2953 C5 | 3969 B3 | 9901 B2 |
| 2954 C3 | 3970 A3 | 9902 A3 |
| 2955 B5 | 3971 A2 | 9903 A4 |
| 2956 B3 | 3972 A2 | 9906 A4 |
| 2957 B4 | 3973 B1 | X31 A1 |
| 2958 B3 | 3974 C1 | X49 D3 |
| 2959 B3 | 3975 C2 | X94 A4 |
| 2960 C5 | 3976 C2 | |
| 2961 C5 | 3977 C1 | |
| 2962 C3 | 3978 C1 | |
| 2963 C3 | 3979 B1 | |
| 2964 C4 | 3980 C2 | |
| 2965 C4 | 3981 A5 | |
| 2975 C2 | 3982 A5 | |
| 2978 B4 | 3983 B5 | |
| 2980 B2 | 3985 B2 | |
| 2981 C3 | 3986 C3 | |
| 3951 C4 | 3987 C2 | |
| 3952 C3 | 3988 B1 | |
| 3953 C5 | 3989 B1 | |
| 3954 C3 | 3990 B1 | |
| 3955 B3 | 3991 B4 | |
| 3956 B3 | 3992 B4 | |
| 3957 B3 | 5950 A4 | |
| 3958 B3 | 6950 D1 | |
| 3959 B4 | 7950 B2 | |
| 3960 B4 | 7951 A3 | |
| 3961 B2 | 7952 A3 | |

Sops controle module/Scanning module

SOPS CONTROLE MODULE 1007

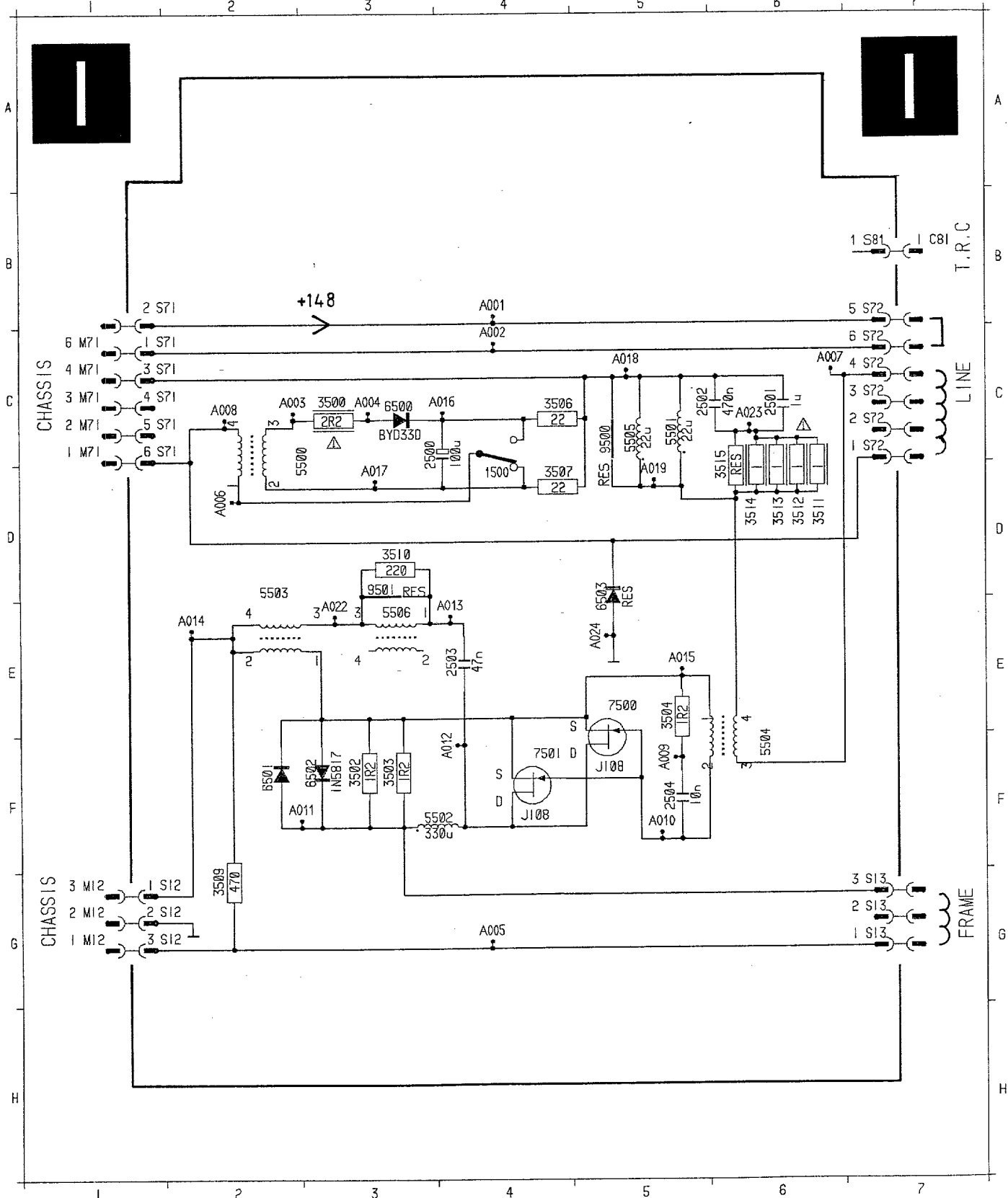


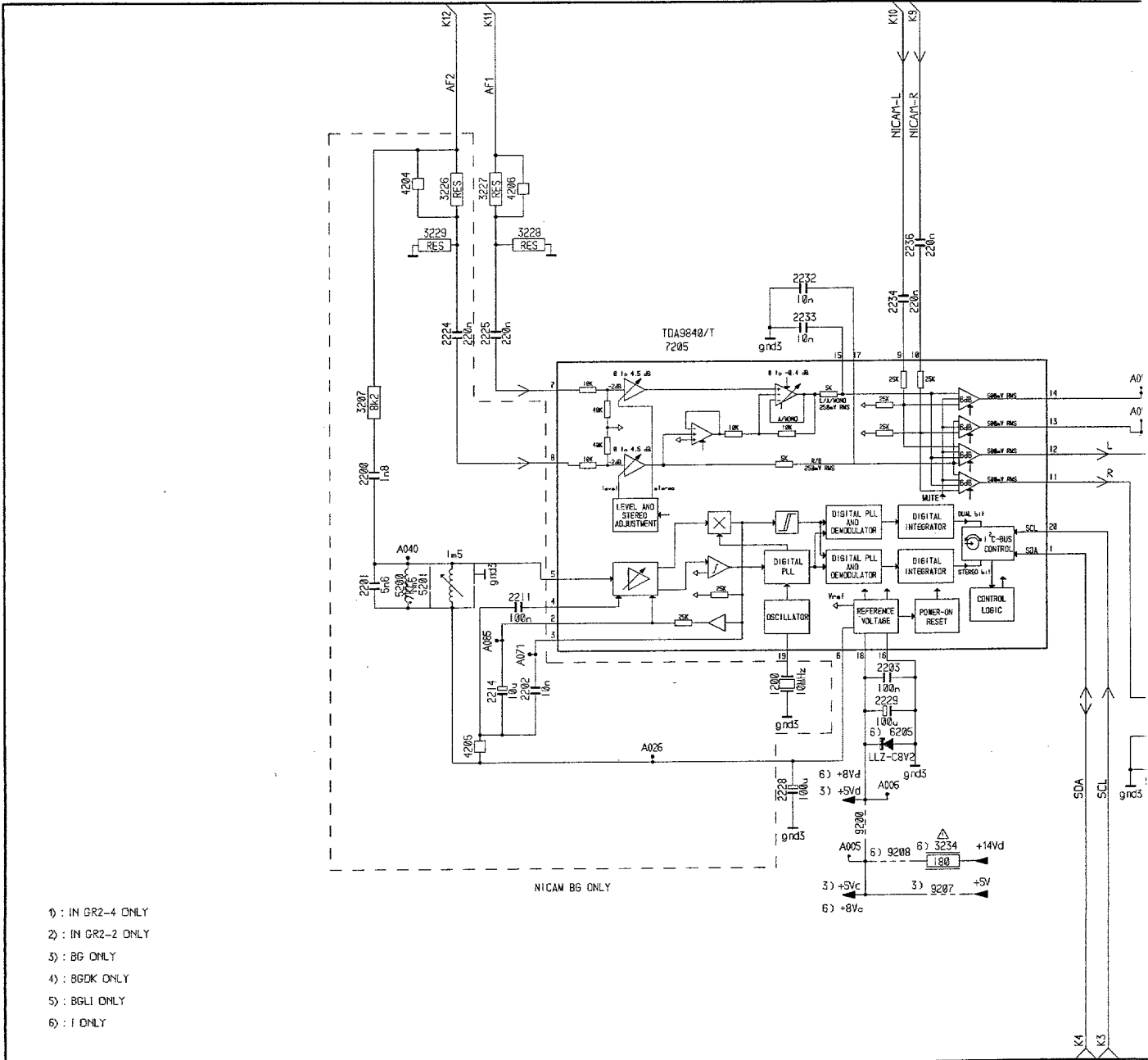
SCANNING MODULE 1009



Scanning module

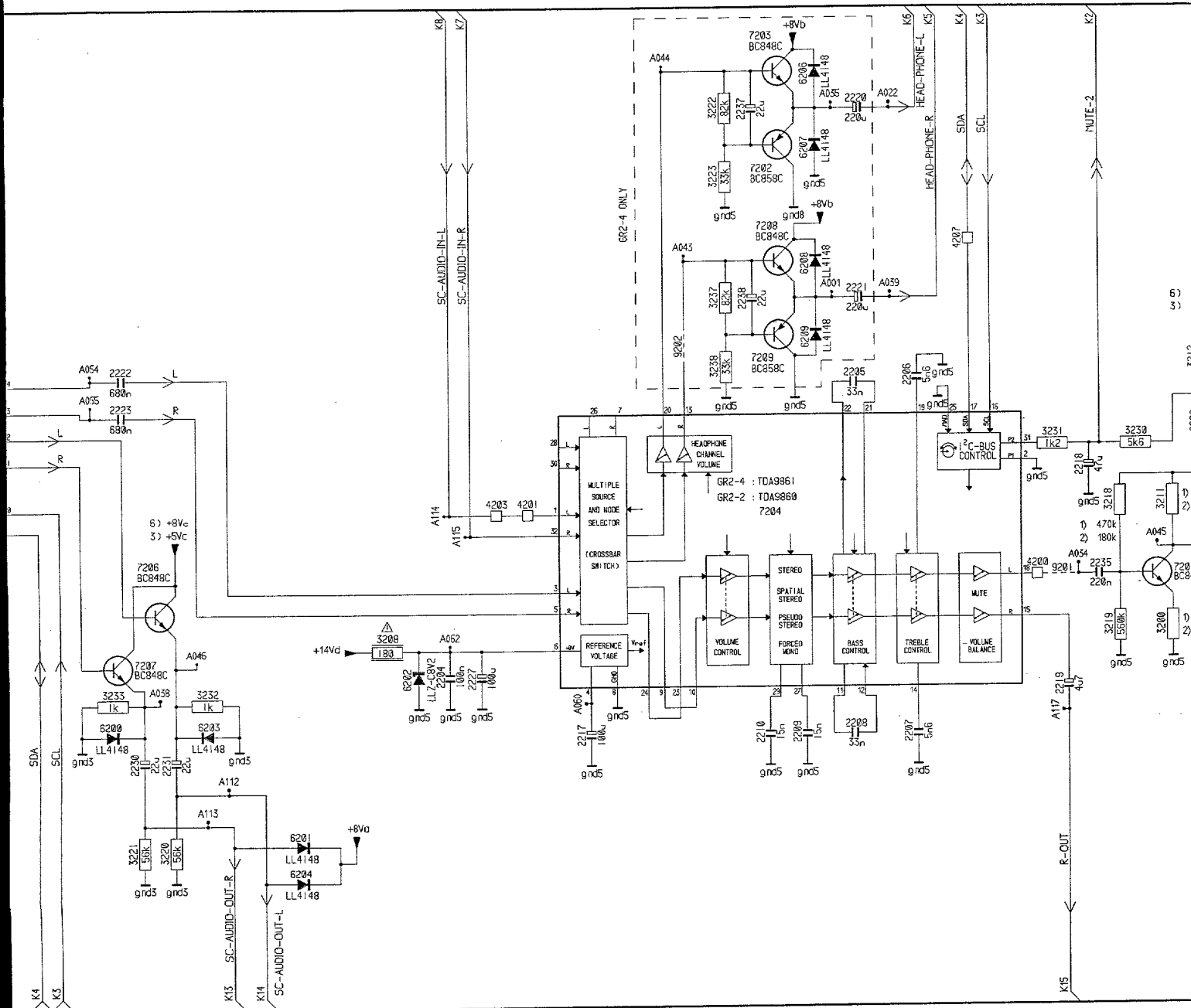
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1501	A 4	3504	F 5	3514	D 6	5506	C 5	A001	B 4	A010	F 5	A019	C 5	S12	G 2	S71	C 2		
2500	C 3	3506	C 4	3515	D 4	6500	C 4	A002	C 4	A011	F 2	A020	B 3	S13	G 2	S72	C 2		
2501	C 6	3507	D 4	3516	D 4	6501	C 4	A003	C 2	A012	F 4	A021	B 5	S13	G 2	S72	C 2		
2502	C 5	3508	B 3	5500	C 3	6502	C 5	A004	C 3	A013	F 2	A022	C 5	S13	G 2	S72	C 2		
2503	F 4	3509	G 2	5501	C 4	6503	C 5	A005	D 2	A014	F 5	A023	F 5	S13	G 2	S72	C 2		
2504	F 5	3510	D 3	5502	C 4	7500	C 5	A006	D 4	A015	F 5	A024	F 5	S13	G 2	S72	C 2		
3500	C 3	3511	D 6	5503	D 2	7501	C 4	A007	C 6	A016	C 4	A025	G 4	S13	G 2	S72	C 2		
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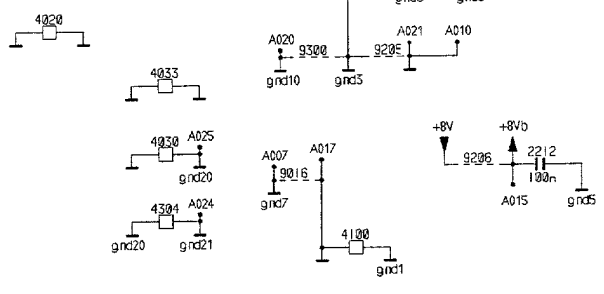
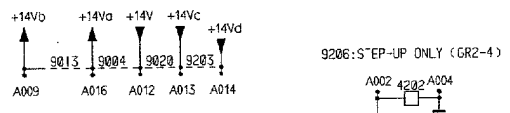
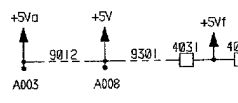
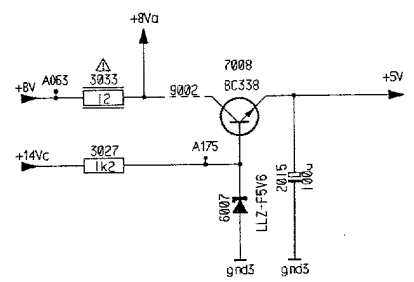
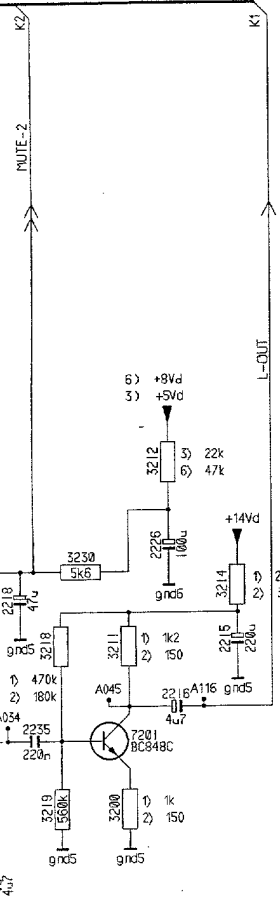
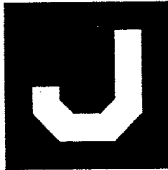
- 1) : IN GR2-4 ONLY
- 2) : IN GR2-2 ONLY
- 3) : BG ONLY
- 4) : BGBK ONLY
- 5) : BGLI ONLY
- 6) : I ONLY

10 11 12 13 14 15 16 17 18 19 20 21



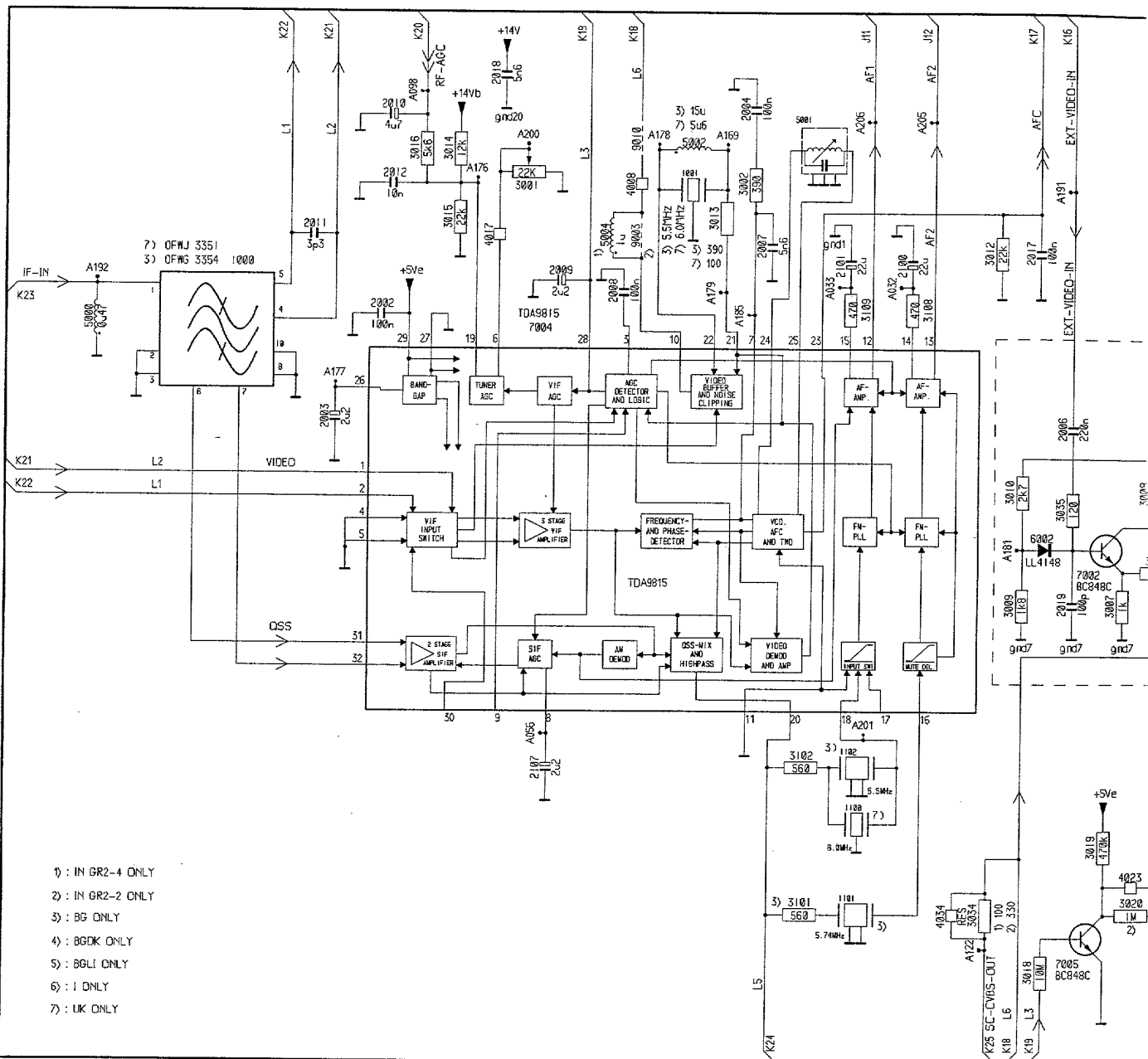
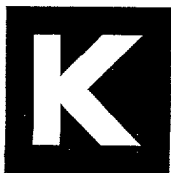
6) 3) 5) 12

10 11 12 13 14 15 16 17 18 19 20 21

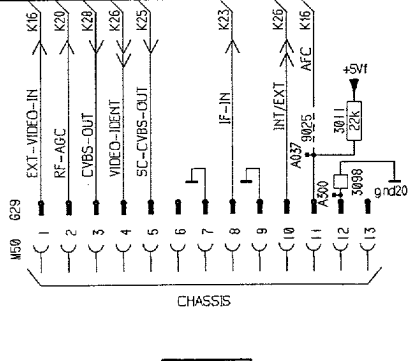
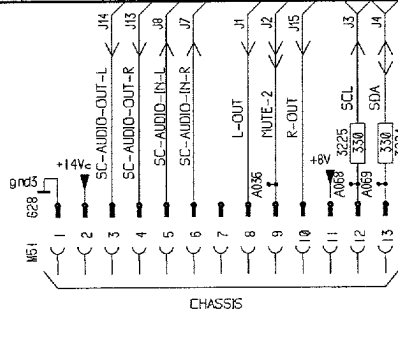
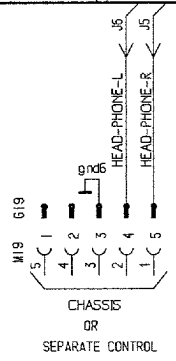
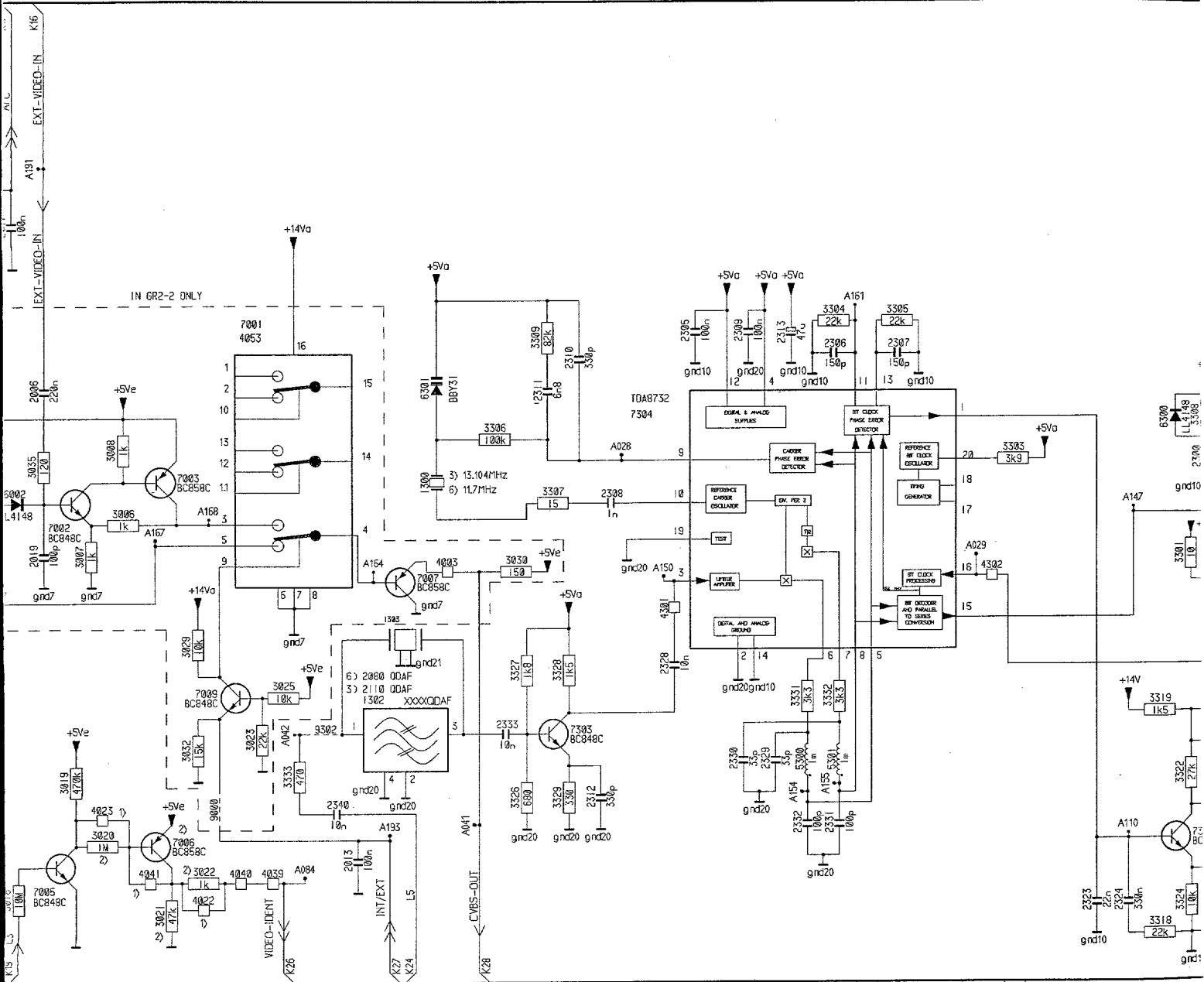


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2013	E26	A044	C16
2200	G 4	A045	H21
2201	H 4	A046	I12
2202	I 5	A054	F11
2203	I 8	A055	F11
2204	I14	A060	I15
2205	F18	A065	D24
2206	F18	A065	D24
2207	J18	A071	H 5
2208	I18	A065	H 5
2209	J17	A112	G12
2210	J17	A113	J12
2211	H 5	A114	G14
2212	K28	A115	H14
2214	I 5	A116	H22
2215	G22	A117	I20
2219	H21	A175	E26
2219	J15		
2218	G20		
2219	I20		
2220	D18		
2221	F18		
2222	F18		
2223	F11		
2224	F 4		
2225	F 5		
2226	G21		
2227	I14		
2228	J 7		
2229	I 8		
2230	J11		
2231	J11		
2232	E 8		
2233	E 8		
2234	E 8		
2235	H20		
2236	E 9		
2237	D17		
2238	E17		
2239	E25		
2240	D25		
2241	F 4		
2242	F 4		
2243	G21		
2244	G21		
2245	I12		
2246	I12		
2247	E17		
2248	D 4		
2249	D 5		
2250	E 4		
2251	G21		
2252	G20		
2253	I12		
2254	I12		
2255	J 9		
2256	E17		
2257	F17		
2258	J24		
2259	K25		
2260	K25		
2261	G26		
2262	J05		
2263	G27		
2264	K26		
2265	H20		
2266	G15		
2267	G15		
2268	D 4		
2269	D 5		
2270	E18		
2271	K25		
2272	H 4		
2273	H 4		
2274	E26		
2275	I11		
2276	K13		
2277	I12		
2278	K13		
2279	I 9		
2280	C18		
2281	D18		
2282	D18		
2283	E18		
2284	J05		
2285	D26		
2286	H21		
2287	D17		
2288	C17		
2289	G17		
2290	F 6		
2291	H11		
2292	I11		
2293	E17		
2294	E17		
2295	E25		
2296	I25		
2297	G25		
2298	I24		
2299	K25		
2300	K25		
2301	J 8		
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2305	I26		
2306	K26		
2307	K 9		
2308	J 9		
2309	I27		
2310	J26		
2311	G26		
2312	E18		
2313	I27		
2314	E18		
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2316	E18		
2317	I27		
2318	E18		
2319	I27		
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2391	E18		
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2393	E18		
2394	I27		
2395	E18		
2396	I27		
2397	E18		
2398	I27		
2399	E18		
2400	I27		

Nicam IF-Sound module/Nicam ZF-Ton module



- 1) : IN GR2-4 ONLY
- 2) : IN GR2-2 ONLY
- 3) : BG ONLY
- 4) : BGDK ONLY
- 5) : BGLI ONLY
- 6) : I ONLY
- 7) : LIK ONLY

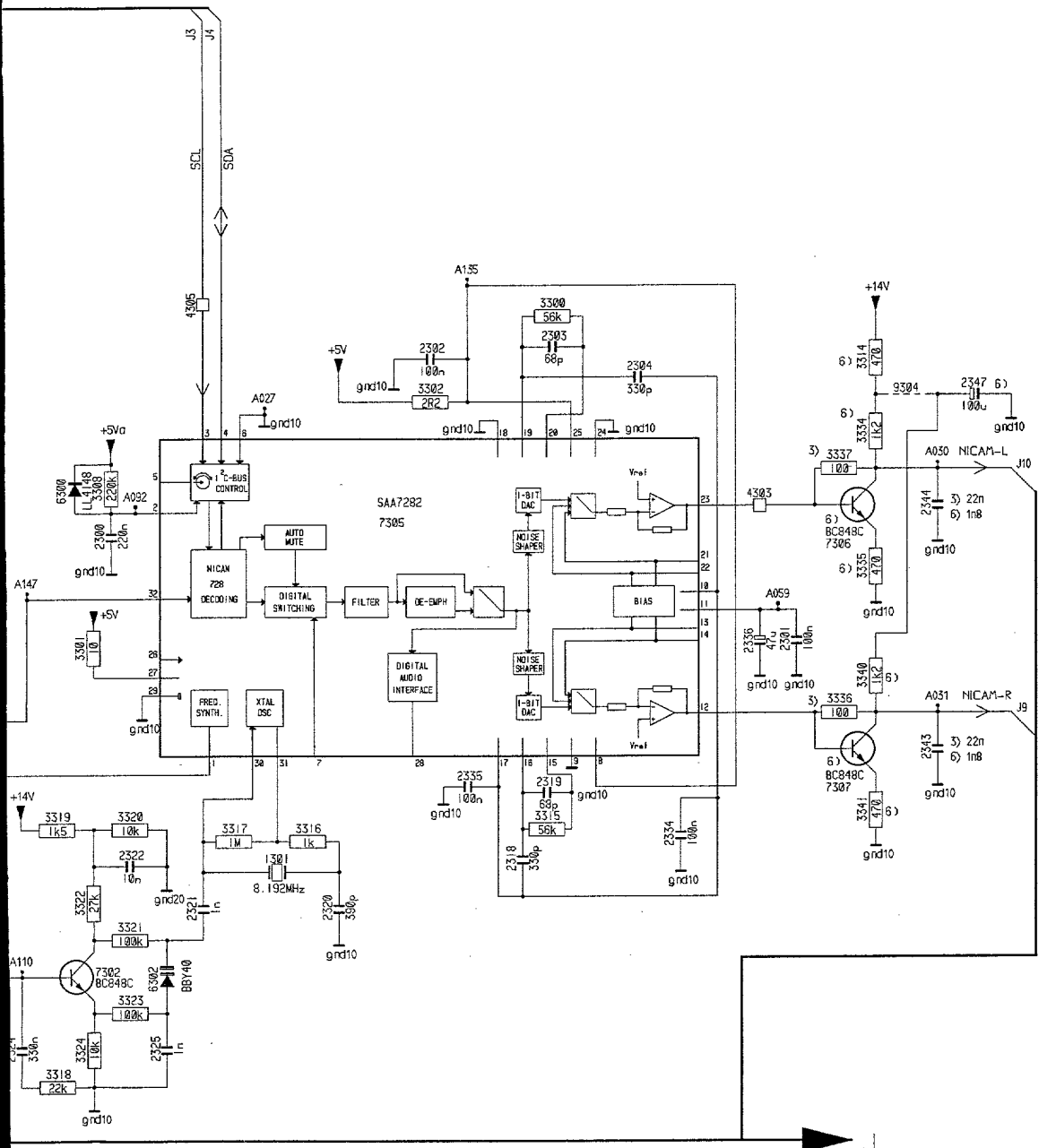


B | P 7

B | P 7

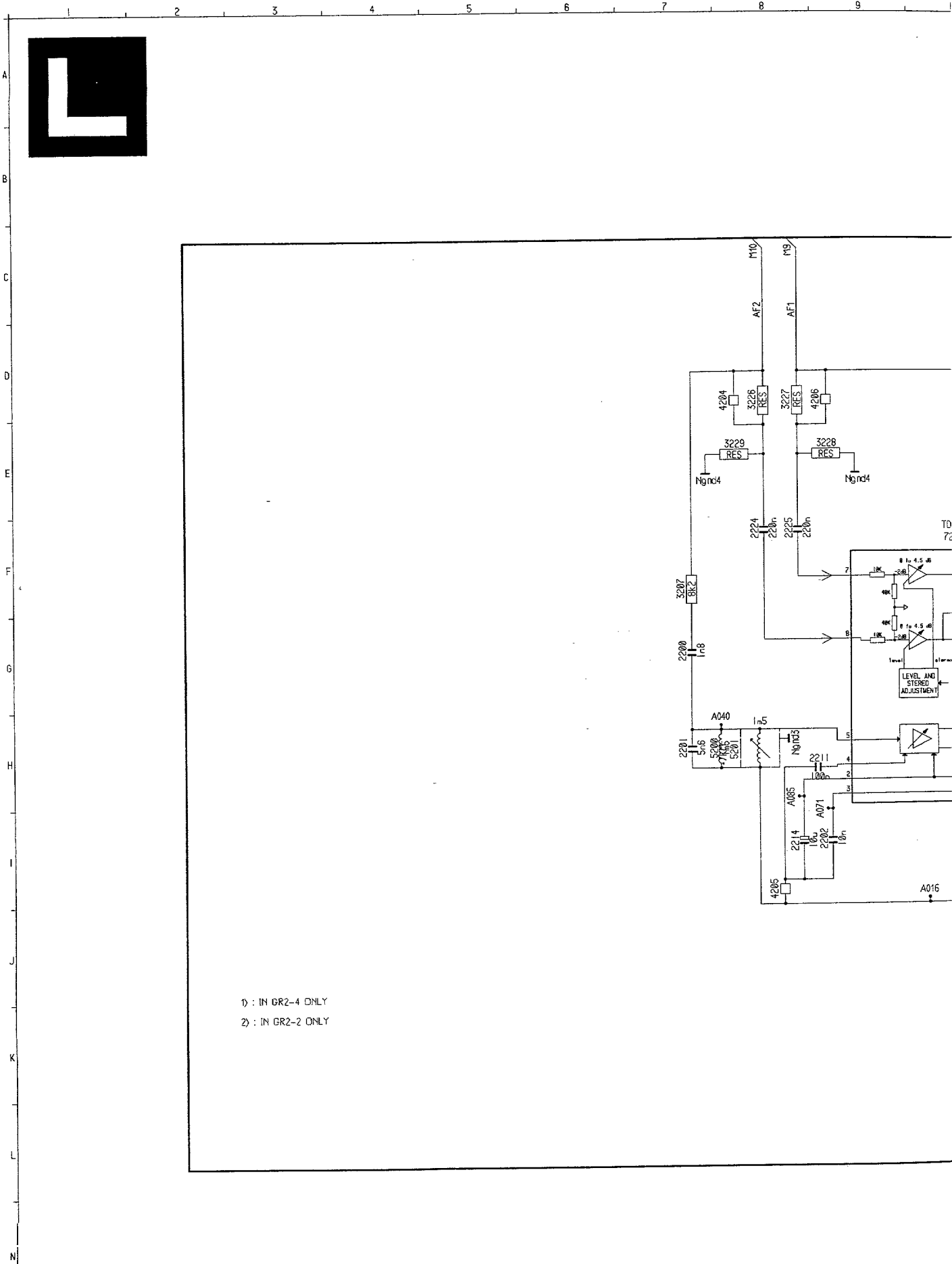
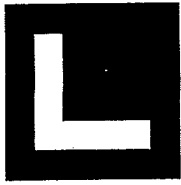
B | P 7

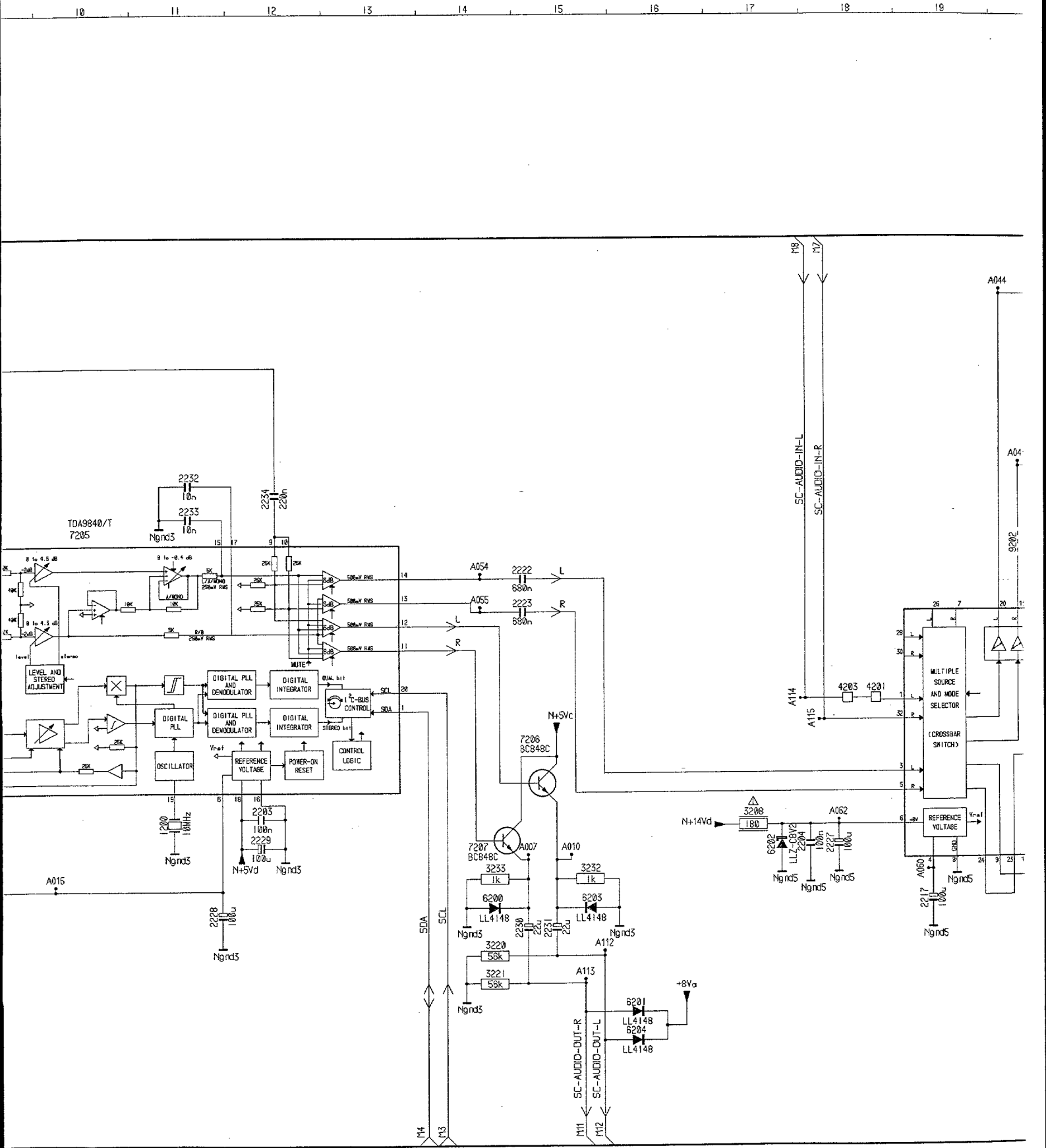
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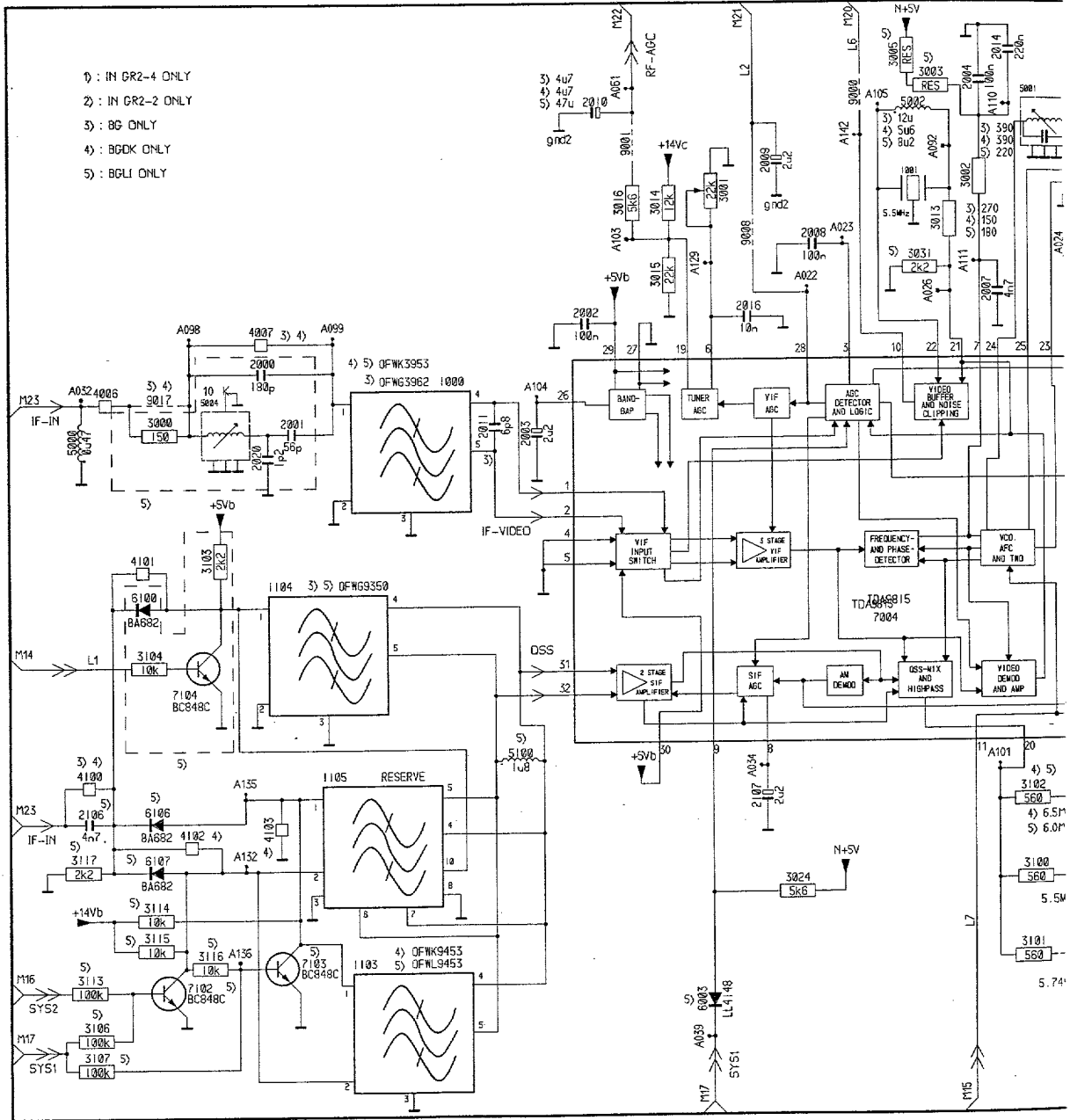
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1102	I 8	7006	J11
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1301	I22	7008	I12
1302	I13	7302	J21
1303	H13	7303	I15
2002	E 4	7304	F15
2003	F 3	7305	F23
2004	F 3	7306	G27
2005	F10	7307	I27
2007	D 7	9000	J12
2008	E 6	9003	D 6
2009	D 3	9010	C 6
2010	D 3	9025	L19
2011	D 3	9302	I13
2012	D 4	9304	E27
2013	J13	A027	E22
2017	D10	A028	F15
2018	C 5	A029	G19
2019	G19	A030	F28
2100	D 8	A031	H28
2101	D 8	A032	E 8
2107	I 5	A033	E 8
2300	F21	A036	M16
2301	G28	A037	M19
2302	E26	A041	J14
2303	E25	A042	I12
2304	E25	A056	I 5
2305	E19	A059	G26
2306	A058	A16	M16
2307	E18	A069	M17
2308	G15	A084	J12
2309	E17	A092	F21
2310	E15	A098	C 4
2311	F15	A110	J20
2312	H15	A122	J 9
2313	E17	A135	D24
2318	I24	A147	G20
2319	H25	A150	G16
2320	A18	A154	J17
2321	I22	A155	J17
2322	I21	A161	E18
2323	K20	A164	G13
2324	K20	A167	G11
2325	K21	A168	G11
2326	H16	A169	D 5
2329	I17	A176	D 5
2330	I16	A177	E 3
2331	J17	A178	C 7
2332	J17	A181	G 7
2333	I14	A191	G 9
2334	I26	A185	E 7
2335	H24	A191	D10
2336	G26	A192	D 1
2337	J15	A193	J13
2343	H28	A200	C 5
2344	F28	A201	H 8
2347	E28	A205	C 9
3001	D 5	A206	C 8
3002	D 5	A300	M19
3003	G11	G19	M13
3007	G10	G19	M13
3008	F11	G19	M13
3009	G 9	G19	M13
3010	G10	G19	M14
3011	L20	G28	M14
3012	D 9	G28	M15
3013	D 7	G28	M15
3014	C 4	G28	M15
3015	C 4	G28	M15
3016	C 4	G28	M15
3018	X10	G28	M16
3019	I10	G28	M16
3020	J11	G28	M16
3021	K11	G28	M16
3022	J11	G28	M16
3023	I12	G28	M17
3025	I12	G28	M17
3029	H11	G28	M17
3030	G14	G29	M17
3032	I11	G29	M18
3034	J 9	G29	M18
3035	F10	G29	M18
3038	M20	G29	M18
3101	J 8	G29	M18
3102	T 8	G29	M19
3108	E 9	G29	M19
3109	F 8	G29	M19
3109	L17	G29	M19
3224	L17	G29	M19
3300	E25	G29	M19
3301	G21	G29	M19
3302	E24	G29	M19
3303	E15	G29	M19
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3306	G15	G29	M19
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3315	K21	G29	M19
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3325	J14	G29	M19
3327	H14	G29	M19
3328	H15	G29	M19
3329	J15	G29	M19
3330	I17	G29	M19
3331	I17	G29	M19
3332	I17	G29	M19
3333	I19	G29	M19
3334	F22	G29	M19
3335	G27	G29	M19
3336	H27	G29	M19
3337	F27	G29	M19
3338	H27	G29	M19
3340	H27	G29	M19
3341	I27	G29	M19
4005	G14	G29	M19
4008	D 6	G29	M19
4017	D 5	G29	M19
4022	K11	G29	M19
4023	J10	G29	M19
4034	J 9	G29	M19
4039	J12	G29	M19
4040	J12	G29	M19
4041	J11	G29	M19
4301	H16	G29	M19
4302	G19	G29	M19
4303	F26	G29	M19
4305	E22	G29	M19
5000	F 7	G29	M19
5001	C 7	G29	M19
5002	C 7	G29	M19
5004	O 6	G29	M19
5300	I17	G29	M19
5301	I17	G29	M19
6002	G18	G29	M19
6300	F20	G29	M19
6301	F14	G29	M19
6302	J21	G29	M19
7001	E12	G29	M19

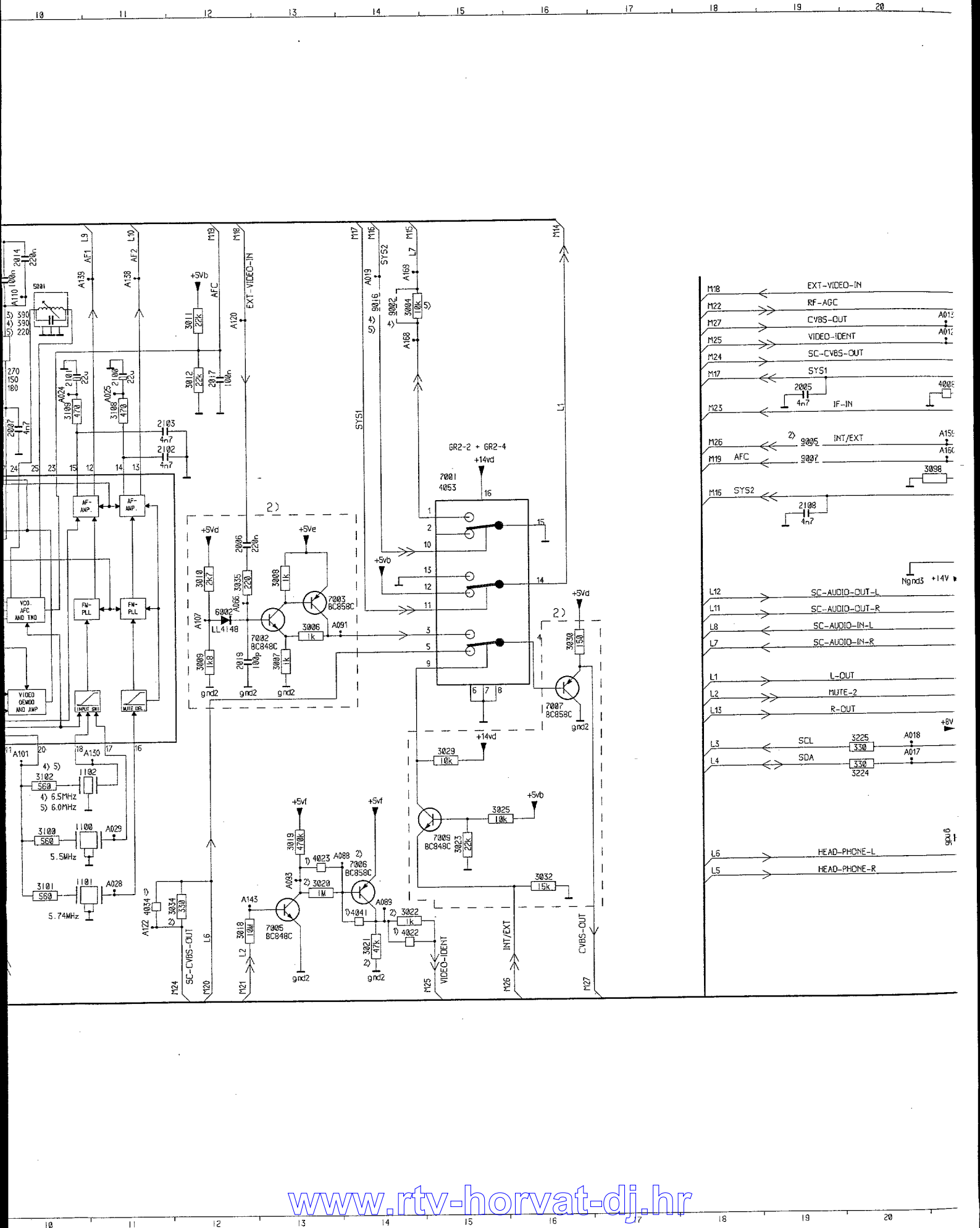
21 22 23 24 25 26 27 28





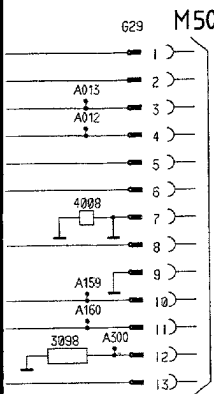
Stereo IF-Sound module/Stereo ZF-Ton module



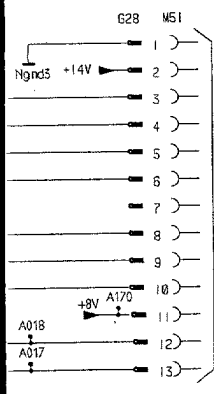
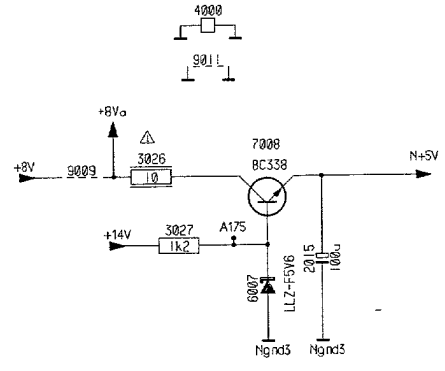




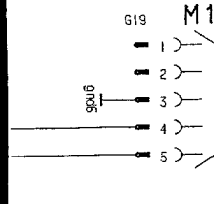
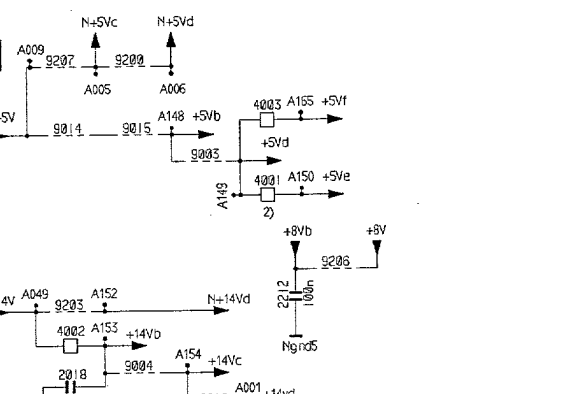
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1001	D 9	A002	J25
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1101	K10	A004	K25
1102	L10	A005	L25
1103	K 4	A006	K24
1104	H 4	A009	G23
1105	I 4	A012	D21
2000	F14	A015	D21
2001	F14	A017	D21
2002	E16	A018	I26
2003	E16	A019	C14
2004	C19	A022	H18
2005	C19	A025	H18
2006	E16	A024	H18
2007	E16	A025	H18
2008	E18	A026	H19
2009	D18	A028	K11
2010	D18	A029	J11
2011	C15	A032	F12
2014	C15	A034	F12
2015	E25	A039	K 7
2015	E18	A049	I23
2017	E12	A051	C 7
2018	I23	A056	G12
2019	H12	A058	J14
2020	G 4	A059	K14
2100	E11	A091	H13
2101	E10	A032	D19
2102	E11	A033	K13
2103	E11	A038	H13
2106	E11	A059	H13
2107	I 8	A101	I10
2108	F19	A102	I23
2212	I24	A103	I11
3000	F 7	A104	F 6
3001	D 7	A105	D 9
3002	D 9	A107	H12
3003	C 9	A110	D10
3004	D14	A111	E 9
3005	C19	A112	E 9
3006	E16	A113	G11
3007	H13	A129	E 7
3008	G13	A130	I11
3009	H12	A132	J 3
3010	D12	A136	K 3
3011	D12	A138	K 3
3012	E12	A139	C11
3013	E19	A139	C11
3014	D 7	A142	D 9
3015	F 7	A143	H12
3016	D 7	A148	G24
3018	K12	A149	H24
3019	J13	A150	H25
3020	K13	A152	I23
3021	K14	A152	I23
3022	K14	A154	I24
3023	J15	A156	J24
3025	J15	A157	K24
3026	E15	A158	E21
3027	E24	A159	E21
3029	I15	A155	G25
3030	H16	A168	D14
3031	E 9	A159	C14
3032	K16	A178	E24
3034	K12	A175	E24
3035	G12	A300	F21
3038	F21	A19	J21
3100	J10	G19	J21
3101	K10	G19	J21
3102	I10	G19	J21
3103	H 3	G28	J21
3104	H 3	G28	J21
3106	K12	G28	H21
3107	E11	G28	H21
3108	E11	G28	H21
3109	E10	G28	H21
3113	K12	G28	H21
3114	J13	G28	H21
3115	K13	G28	H21
3116	K13	G28	H21
3117	J 2	G28	H21
3224	I20	G28	I21
3225	I20	G28	I21
4000	D24	G28	I21
4001	H24	G28	I21
4002	I23	G28	F21
4003	G24	G28	F21
4006	F12	G28	F21
4007	F 4	G28	F21
4008	E21	G28	E21
4022	K14	G28	E21
4023	J13	G28	E21
4034	K11	G28	E21
4041	K14	G28	D21
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4101	G 3	G28	D21
4102	J 4	G28	D21
4103	J 4	G28	J24
4104	J24	G28	J24
4202	J25	G28	J24
4209	J24	G28	J24
5000	F 2	G28	F 2
5001	D18	G28	D18
5002	D 9	G28	D18
5004	F 3	G28	F 3
5100	I 6	G28	I 6
6002	G12	G28	K 7
6005	K 7	G28	K 7
6007	F24	G28	F24
6130	H 3	G28	H 3
6106	J 3	G28	J 3
6107	J 3	G28	J 3
7001	H12	G28	H12
7002	H12	G28	H12
7003	G15	G28	H12
7004	H 9	G28	H 9
7005	K13	G28	K13
7006	J14	G28	J14
7007	I15	G28	I15
7008	E24	G28	E24
7009	J15	G28	J15
7102	K 3	G28	K 3
7103	K 4	G28	K 4
7104	K 4	G28	K 4
9000	D 9	G28	D 9
9001	D 7	G28	D 7
9002	D14	G28	D14
9003	H24	G28	H24
9004	I23	G28	I23
9005	E19	G28	E19
9006	K23	G28	K23
9007	F19	G28	F19
9008	E23	G28	E23
9009	E23	G28	E23
9010	J24	G28	J24
9011	D24	G28	D24
9012	K23	G28	K23
9013	J23	G28	J23
9014	H23	G28	H23
9015	H23	G28	H23
9016	D14	G28	D14
9017	F 3	G28	F 3
9200	G25	G28	G25
9203	I24	G28	I24
9204	J25	G28	J25
9205	K24	G28	K24
9206	I25	G28	I25
9207	G25	G28	G25
9209	J25	G28	J25



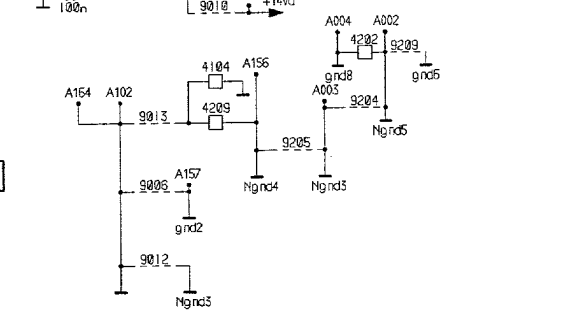
B P7

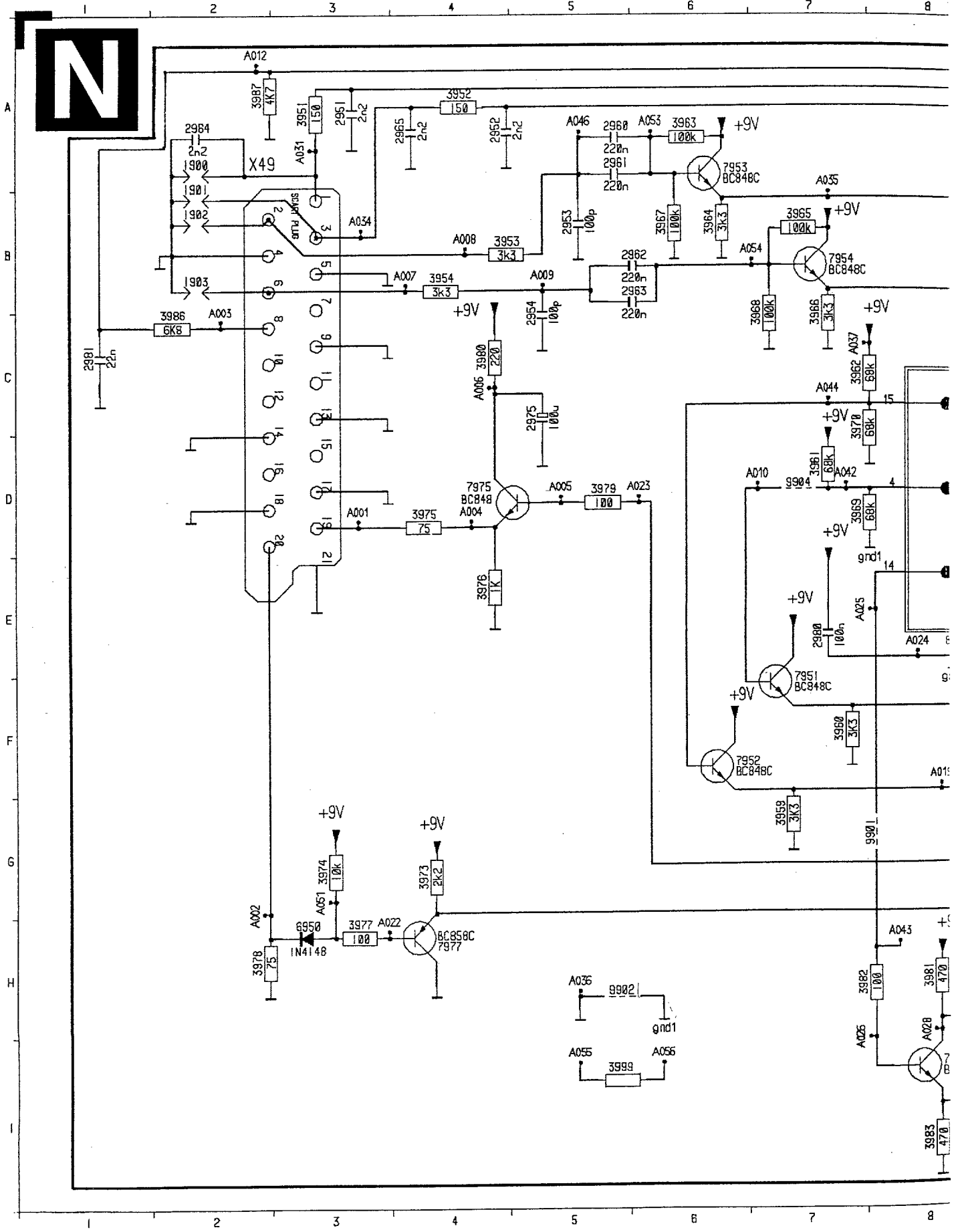


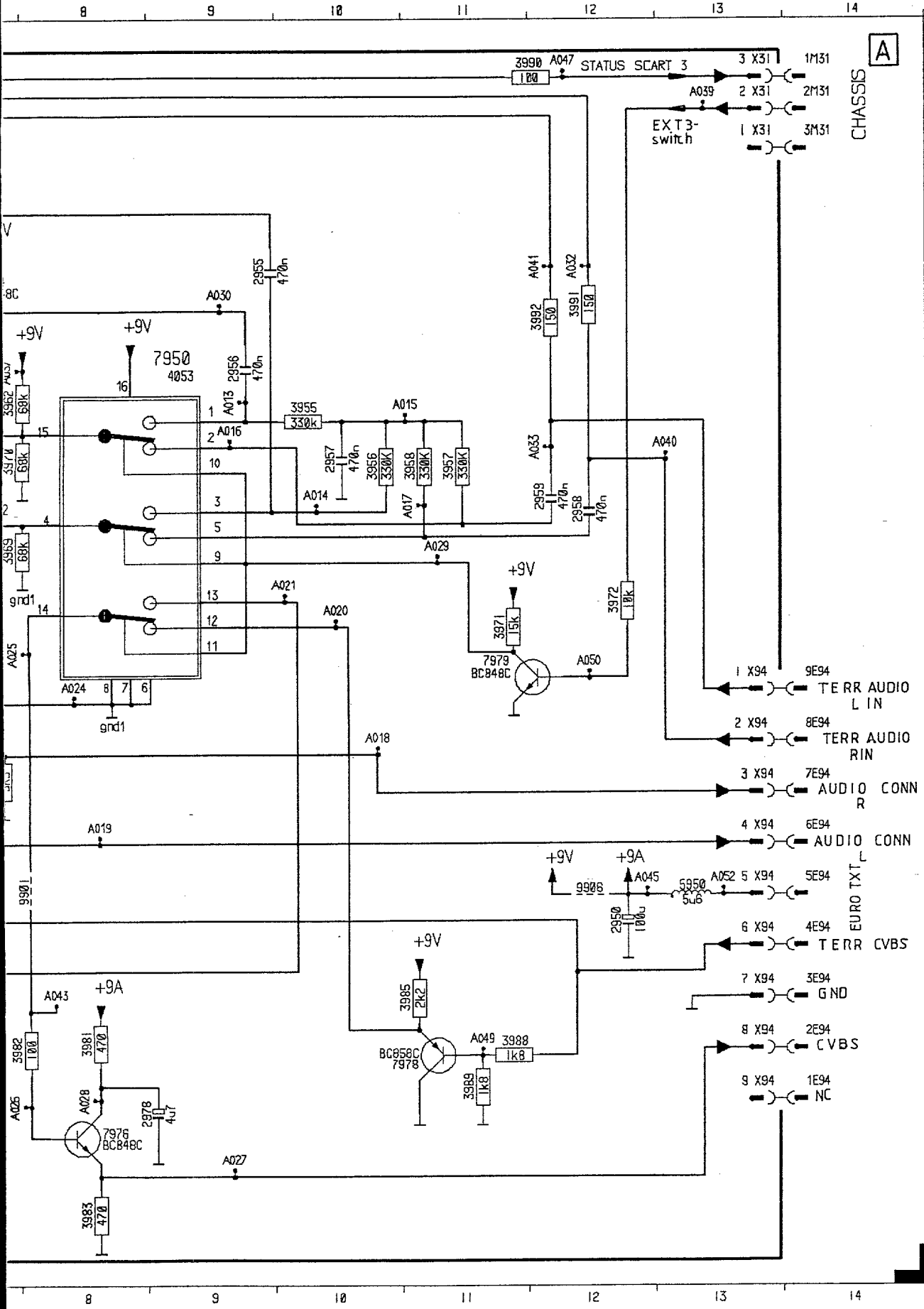
B P7



B P7







1900	A	2	2025	A025	E	7
1901	A	3	2026	A026	E	7
1902	A	4	2027	A027	E	7
1903	A	5	2028	A028	E	7
1904	A	6	2029	A029	E	7
1905	A	7	2030	A030	E	7
1906	A	8	2031	A031	E	7
1907	A	9	2032	A032	E	7
1908	A	10	2033	A033	E	7
1909	A	11	2034	A034	E	7
1910	A	12	2035	A035	E	7
1911	A	13	2036	A036	E	7
1912	A	14	2037	A037	E	7
1913	A	15	2038	A038	E	7
1914	A	16	2039	A039	E	7
1915	A	17	2040	A040	E	7
1916	A	18	2041	A041	E	7
1917	A	19	2042	A042	E	7
1918	A	20	2043	A043	E	7
1919	A	21	2044	A044	E	7
1920	A	22	2045	A045	E	7
1921	A	23	2046	A046	E	7
1922	A	24	2047	A047	E	7
1923	A	25	2048	A048	E	7
1924	A	26	2049	A049	E	7
1925	A	27	2050	A050	E	7
1926	A	28	2051	A051	E	7
1927	A	29	2052	A052	E	7
1928	A	30	2053	A053	E	7
1929	A	31	2054	A054	E	7
1930	A	32	2055	A055	E	7
1931	A	33	2056	A056	E	7
1932	A	34	2057	A057	E	7
1933	A	35	2058	A058	E	7
1934	A	36	2059	A059	E	7
1935	A	37	2060	A060	E	7
1936	A	38	2061	A061	E	7
1937	A	39	2062	A062	E	7
1938	A	40	2063	A063	E	7
1939	A	41	2064	A064	E	7
1940	A	42	2065	A065	E	7
1941	A	43	2066	A066	E	7
1942	A	44	2067	A067	E	7
1943	A	45	2068	A068	E	7
1944	A	46	2069	A069	E	7
1945	A	47	2070	A070	E	7
1946	A	48	2071	A071	E	7
1947	A	49	2072	A072	E	7
1948	A	50	2073	A073	E	7
1949	A	51	2074	A074	E	7
1950	A	52	2075	A075	E	7
1951	A	53	2076	A076	E	7
1952	A	54	2077	A077	E	7
1953	A	55	2078	A078	E	7
1954	A	56	2079	A079	E	7
1955	A	57	2080	A080	E	7
1956	A	58	2081	A081	E	7
1957	A	59	2082	A082	E	7
1958	A	60	2083	A083	E	7
1959	A	61	2084	A084	E	7
1960	A	62	2085	A085	E	7
1961	A	63	2086	A086	E	7
1962	A	64	2087	A087	E	7
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1971	A	73	2096	A096	E	7
1972	A	74	2097	A097	E	7
1973	A	75	2098	A098	E	7
1974	A	76	2099	A099	E	7
1975	A	77	2100	A100	E	7
1976	A	78	2101	A101	E	7
1977	A	79	2102	A102	E	7
1978	A	80	2103	A103	E	7
1979	A	81	2104	A104	E	7
1980	A	82	2105	A105	E	7
1981	A	83	2106	A106	E	7
1982	A	84	2107	A107	E	7
1983	A	85	2108	A108	E	7
1984	A	86	2109	A109	E	7
1985	A	87	2110	A110	E	7
1986	A	88	2111	A111	E	7
1987	A	89	2112	A112	E	7
1988	A	90	2113	A113	E	7
1989	A	91	2114	A114	E	7
1990	A	92	2115	A115	E	7
1991	A	93	2116	A116	E	7
1992	A	94	2117	A117	E	7
1993	A	95	2118	A118	E	7
1994	A	96	2119	A119	E	7
1995	A	97	2120	A120	E	7
1996	A	98	2121	A121	E	7
1997	A	99	2122	A122	E	7
1998	A	100	2123	A123	E	7
1999	A	101	2124	A124	E	7
2000	A	102	2125	A125	E	7
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2003	A	105	2128	A128	E	7
2004	A	106	2129	A129	E	7
2005	A	107	2130	A130	E	7
2006	A	108	2131	A131	E	7
2007	A	109	2132	A132	E	7
2008	A	110	2133	A133	E	7
2009	A	111	2134	A134	E	7
2010	A	112	2135	A135	E	7
2011	A	113	2136	A136	E	7
2012	A	114	2137	A137	E	7
2013	A	115	2138	A138	E	7
2014	A	116	2139	A139	E	7
2015	A	117	2140	A140	E	7
2016	A	118	2141	A141	E	7
2017	A	119	2142	A142	E	7
2018	A	120	2143	A143	E	7
2019	A	121	2144	A144	E	7
2020	A	122	2145	A145	E	7
2021	A	123	2146	A146	E	7
2022	A	124	2147	A147	E	7
2023	A	125	2148	A148	E	7
2024	A	126	2149	A149	E	7

Setting conditions

All electrical settings should be made under the following conditions:

- * supply voltage: 220 - 240 V \pm 10%;
50 Hz \pm 5%
- * warming-up time \approx 10 minutes
- * the voltages and oscillograms have been measured with regard to tuner earth.
- * measuring probe: Ri > 10 M Ω ; Ci < 2.5 pF.

1. Settings on the carrier board

1.1 +148V/+95V supply voltage

Connect a voltmeter over C2631. Using R3635, set the supply voltage to +148V \pm 0.5V for 25" and 28" units or to 95V \pm 0.5V for 21" units.

1.2 Focusing

This is set using the focusing potentiometer (on the top of the line output transformer).

1.3 Vg2 setting

Connect a pattern generator and supply a blanking frame signal (black picture). Switch the unit to the service default mode (see section 9). Connect an oscilloscope to the emitters of transistors 7304 and 7364 on the picture tube module. Set the oscilloscope to frame frequency. Measure the DC voltage level of the measuring pulses (see Fig. 7.2). Using the Vg2 potentiometer on the line output transformer, set the measuring pulse with the lowest DC voltage level to:
* +130V \pm 5V for all sets.

1.4 Horizontal synchronization

Connect pin 5-IC7470 to pin 9-IC7470. Supply an aerial signal and tune the set. Adjust in service menu (see section 9), sync.freq. by means of the menu +/- button until the picture is straight. Remove the interconnection.

1.5 Horizontal centring

Set using potentiometer 3461.

1.6 Vertical centring

Set using potentiometer 3516.

1.7 Picture height

Set using potentiometer 3504.

1.8 Picture width

Set using potentiometer 3525.

1.9 East/west correction

Is adjusted with potentiometer 3521

1.10 Chroma bandpass filter

a. Setting for PAL/SECAM sets (TDA4657)

Connect a signal generator (e.g. PM 5138) to pin 20 of the euroconnector (EXT1) and set its frequency to 4.286 MHz/0.5 Vpp. Switch the unit to EXT1. Connect pin 18-IC7306 to +12V. Connect an oscilloscope to pin 9-IC7306. Set 5301 to maximum amplitude. Remove the interconnection.

b. Setting for PAL sets (TDA4510)

Connect a signal generator (e.g. PM 5138) to pin 20 of the euroconnector (EXT1) and set its frequency to 4.436 MHz/0.5Vpp. Connect the unit to EXT1. Connect an oscilloscope to pin 9-IC7305 (TDA4510). Set 5301 to maximum amplitude

1.11 Chroma auxiliary oscillator

Connect a pattern generator and supply a PAL colour bar pattern. Connect pin 11-IC7305 (TDA4510) to earth. Set 2313 so that the colour on the screen has practically stopped. Remove the interconnection.

1.12 White balance

Connect a pattern generator and select a white picture. Switch on the service menu (see section 9) and select "WHITE BALANCE". Set the value of "Green" to 50(G/AMP), and the Value of "Blue" to 45(B/AMP). Value of "Red" to 57(R/AMP). In most cases no further adjustments are required.

1.13 Peak white limiter

Switch on the service menu (see section 9) and select "WHITE BALANCE". Set "WH/LIM" to the value:
- 35 for blackline units
- 51 for non-blackline units
- 63 for 21" 110 degree sets.
- 45 for 29" sets

1.14 Cut-off points of the picture tube

Connect a pattern generator and select a black picture. Switch on the service menu (see section 9) and select "CUT OFF". Set the value of "Red" to 30, and fore "Green" to 30, and for "Blue" to 30. In most cases no further adjustments are required.

1.15 Options

Switch on the service menu and select "OPTIONS" or "OPTION 1". Switch the options "ON" and "OFF" according to whether the following options are present:
- "THIRD SCART" on a set with third scart.
- "TELETEXT" on a teletext set
- "MULTI SYSTEM" for multisystem sets
- "UHF ONLY" for a tuner which can only be tuned to the UHF band
- "NICAM" for stereo sets which can also receive NICAM sound.

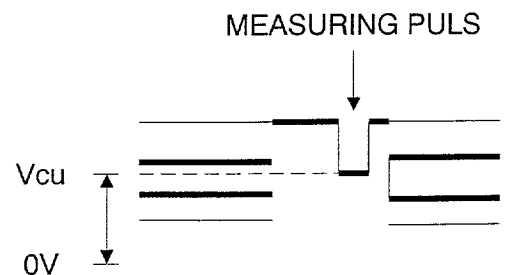


Fig. 7.2

CL 46532048/018
296694

2.1 RF-AGC

If the picture from a strong local transmitter is distorted, adjust 3016 until the picture is not distorted.

2.2a MF-AFC For multi system sets (PAL-BG/SECAM-DK). Connect a pattern generator to pin 8 of connector G29 (IF-module) and select a frequency of 38,9 MHz. Connect a voltmeter to pin 11 of connector G29. Adjust with 5001 the DC voltage to 1.9 V.

2.2b MF-AFC For all other sets. Connect a pattern generator to pin 8 of connector G29 (IF-module) and select a frequency of 38,9 MHz. Connect a voltmeter to pin 11 of connector G29. Adjust with 5001 the DC voltage to 2.3 V.

2.3 Stereo matrix

Connect a pattern generator and supply a PAL BG signal with stereo sound. Select only the right-hand channel sound. Go into service mode. Choose SND stereo and pull out the right connector (seen from the front side of the set). Put volume maximum with volume button. Align with menu-button so that the sound is just not hearable in the left loudspeaker. Leave now the service mode by putting the set in standby.

8. Survey of error messages on the screen

Message on screen	Description	Possible fault
PIP	I ² C error PIP module	+5 on PIP module, IC7406
NICA	I ² C error IC7305 (NICAM sets)	IC7305, +5 on IF module
9860	I ² C error IC7204	+5/+8 on IF module, IC7305
9840	I ² C error IC7205	+5/+8 on IF module, IC7205
TXT	I ² C error teletext module	IC7910/IC7920, +5 on TEXT module
EPROM	I ² C error IC7710	IC7708/IC7710, +5 on IC's
TUNE	I ² C error tuner	+5/+14 on tuner, TS7003
CHR1	I ² C error IC7308	+14 on IC7308
CHR2	I ² C error IC7309	+14 on IC7309
6415	I ² C error IC7820	
BUS + blinking LED	I ² C bus blocked	I ² C bus check on all IC's

Error messages

Internal microcomputer errors and external errors will be signalled by displaying the error number (by OSD) and by continuous blinking the LED (video related errors only).

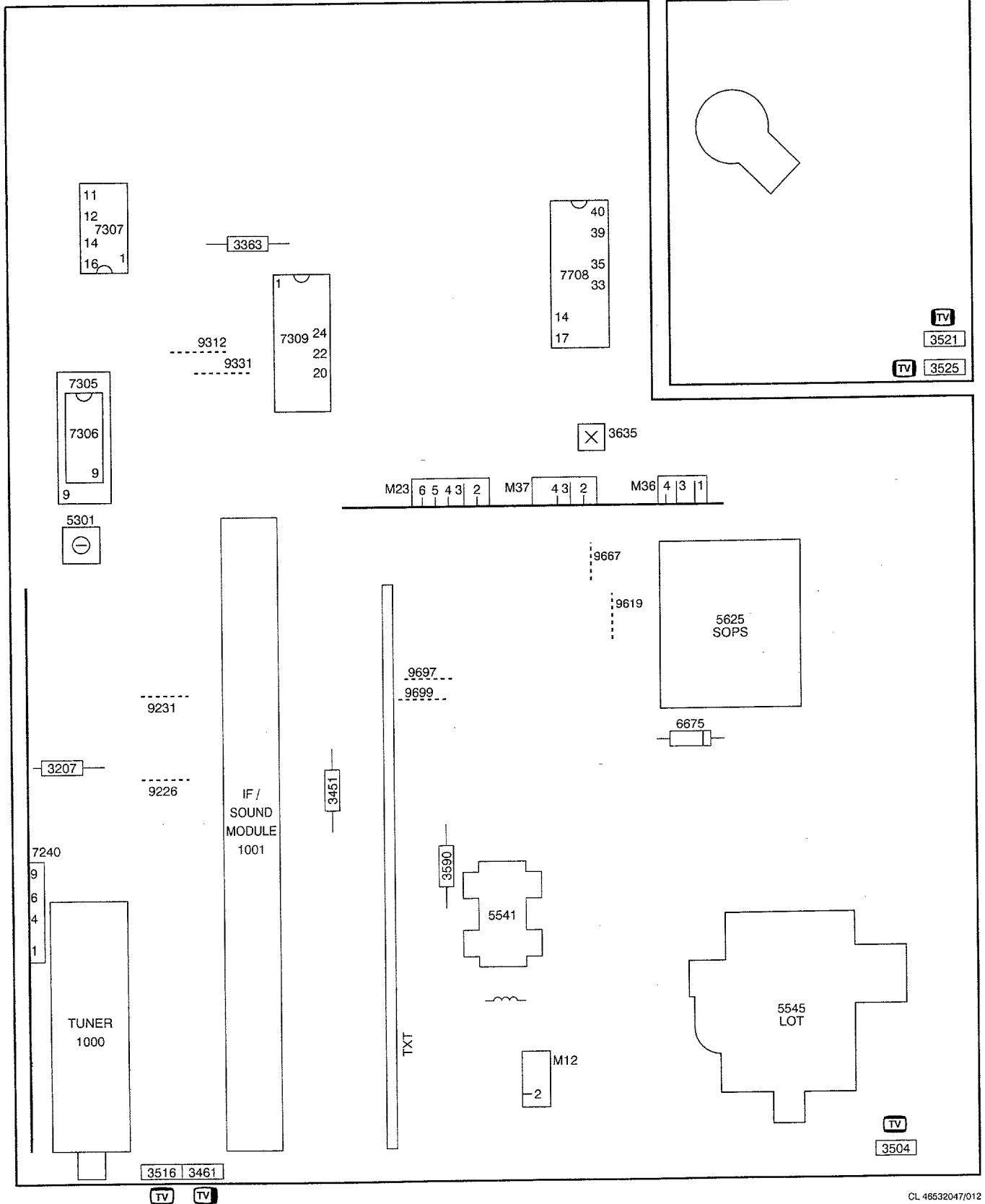
The last five errors will be remembered in the non volatile memory (if possible), this is called the error buffer. After a startup of the system (on by main switch or on from standby) only one error will be added to the buffer (first in, first out procedure), only errors different from the last error in the buffer, will be added to this buffer.

The error will be cleared when the "standby" command is given while the system is in service menu mode.

An active error is displayed continuously in service default mode. The buffer is shown in the service menu mode (Service main menu).

MONO CARRIER

CRT MODULE 4/3



CL 48532047/012
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9. Directions for use

1. Service-Default-Mode

The GR2.4 is equipped with a service default mode. The service default mode is a fixed defined condition in which the television can be set.


1.1 Mode definition

The definition of the fixed mode in the service default mode is as follows:

- all sound and picture adjustments are set in the middle position (except volume, which is set at low and zoom set at zero) in 4/3 mode.
- The set is tuned to 475.25 MHz
- system:
 - * PAL BG or PAL I for single system sets (MULTI-SYSTEM "OFF")
 - * SECAM L/DK for multi-system sets (MULTI-SYSTEM "ON")
 - * SECAM DK for sets for Eastern Europe (MULTI-SYSTEM "ON").
 - * PAL BG for sets for Eastern Europe (MULTI-SYSTEM "OFF").

1.2 Service-default-mode

The service default mode is switched on by briefly short-circuiting the pins M33 and M34 (SERVICE) behind the INSTALL key on the carrier panel when switching the unit on with the mains switch. In order to indicate that the unit is in the service default mode, an "SER" appears on the screen.

The service default mode can only be switched off by switching the unit to standby (). The set is switched off and then on again using the mains switch or mains plug, the service default mode remains switched on. Searching for transmitter frequencies begins following the simultaneous pressing of both "install" keys on the remote control. When the service default mode is operational the following functions are switched off:

- automatic cut-off circuit.

The set can be controlled normally.

1.3 Service menu

- Service menu

The service menu is activated by simultaneously pressing the "menu" and "-" keys on the local operating panel. The service menu now appears on the screen. The service menu offers the facility to set various options and make a number of picture tube settings. The various components in the service menu are selected using the coloured keys on the remote control. The adjustment of the various components is performed with the aid of the "menu +/-" keys on the remote control. The adjusted values and options are immediately stored in the EEPROM when the service menu is exited via "menu on" or "mainsknob" button. With the "menu" key you return to the "default service mode".

Remarks 1:

If a multi-system set is nevertheless to be used with the PAL BG system in the service default mode, the option "MULTI" can be temporarily switched off ("OFF").

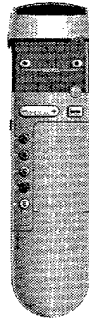
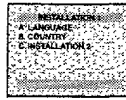
Remarks 2:

If a multi-system set for Eastern Europe is nevertheless to be used with the PAL BG system in the service default mode, the option "MULTI" can be temporarily switched off ("OFF").

Calling up the installation menu

This menu enables you to tune in the channels on the TV set.

- Open the flap on the remote control.
- Press both the **Ⓜ** and **Ⓢ** keys at the same time.
- The **INSTALLATION 1** menu appears on the screen.



Selecting the menu language

You may choose between several languages for the menus which appear on the screen.

You can select **ENGLISH** or one of the other languages offered.

After calling up the **INSTALLATION 1** menu:

- Press the red key **Ⓡ**.
- A display area appears at the bottom of the screen.
- Press the **Ⓢ** key to select your chosen language.
- The text for all menus will appear in the language which you have chosen. Go on to the next adjustment.



Selecting the country

You should now select the country in which you are situated.

After calling up the **INSTALLATION 1** menu:

- Press the green key **Ⓢ**.
- A display area appears at the bottom of the screen.
- Press the **Ⓢ** key to select the letters corresponding to your country (GB for Great Britain).
- Your choice is displayed at the bottom of the screen. You can now go on to **chapter 7** on page 4.



Manual store

After calling up the **INSTALLATION 2** menu (see previous page):

- Press the green key **Ⓢ**.
- The **MANUAL STORE** menu appears.



step a

Selecting the tuning mode

This TV set allows you to choose the tuning mode: **tuning by channel number** (if you know the channel numbers on which the TV channels are broadcast) or **tuning by frequency**.

- Press the red key **Ⓡ**.
- The lower bar of the menu is displayed in red.
- Press the **Ⓢ** key to select the tuning mode.
- The indication **FREQ xxx MHz** means tuning by frequency. The indication **C xx** or **S xx** means tuning by channel number. Go on to **step b**.



Direct selection of a transmitter

If you know the frequency or the channel number of the TV programme which you wish to receive, you can directly enter the number using the keys numbered **Ⓢ** to **Ⓢ** or the **Ⓢ** key.

For example: in tuning by frequency mode, enter 064 for 64 MHz; in tuning by channel number mode, enter 21 for C21 (for 64.25 MHz, enter 064: the exact adjustment is carried out automatically). Go directly to **step c**.

step b

Search

- Press the green key **Ⓢ**.
- The lower bar of the menu is displayed in green, the search starts. The frequency or channel number counts upwards. As soon as a TV channel is found, the counting stops and the rectangle is displayed in blue. If you want to store this channel, go on to **step c**. If you do not want to store the channel:
- Press the green key **Ⓢ** again.
- The search continues.



Fine tuning

If the reception of a TV channel is not satisfactory, you can adjust its frequency or channel number by using the **Ⓢ** key.

Tuning-in TV channels

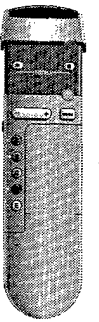
Starting from the **INSTALLATION 1** menu:

- Press the yellow key **Ⓢ**.
- The **INSTALLATION 2** menu appears on the screen.



You have the choice between two methods:

- automatic store:** the TV set stores all the available channels in your area. You just have to renumber the channels according to your preference.
- manual store:** you can manually tune-in each channel, one by one.



Automatic store

After calling up the **INSTALLATION 2** menu (see above):

- Press the red key **Ⓡ**.
- The **AUTO STORE** menu appears.
- Press the red key **Ⓢ** to start the search.
- The indication **SEARCHING PLEASE WAIT** appears on the screen. The TV set searches through the complete frequency range and stores all the TV channels which it finds. The search takes several minutes. A horizontal scale shows the progress of the search. You must wait until the horizontal bar has reached the end of the line.

When the search has finished:

The indication **CHANNELS FOUND** flashes. The total number of TV channels found is displayed. The TV channels have been numbered in the order in which they were found. You must therefore sort them to give them the desired channel numbers.

- Press the **Ⓢ** key.
- The **INSTALLATION 2** menu reappears. You now have to sort the channels: turn to **chapter 8** on page 7.



step c

Numbering the programme

- Press the yellow key **Ⓢ**.
- A display area appears at the bottom of the screen.
- Press the **Ⓢ** key or the keys numbered **Ⓢ** to **Ⓢ** to enter the programme number. Go on to **step d**.



step d

Storing

- Press the blue key **Ⓢ**.
- The indication **PROGRAMME STORED** appears at the bottom of the screen, the TV channel is stored.



repeat

steps **b, c, d**
or **a, b, c, d** if you want to change the tuning mode.

When tuning-in of TV channels is completed

- Press the **Ⓢ** key.
- The **INSTALLATION 2** menu reappears. You can now give names to the TV channels: turn to **chapter 9** on page 8.

To exit from the **INSTALLATION 2** menu:

Press the **Ⓢ** key again. You can now proceed with operating the TV set (page 9).

Naming channels

You can give a name of up to 5 characters to each of the first 40 channels on your TV set (examples: BBC1, CNN...). This function allows you to recognise and display the name and number of the programme being watched.

Starting from the **INSTALLATION 2** menu:

- Press the blue key **4**.
- The **NAMING CHANNELS** menu appears.

step a Programme number

- Press the red key **1**.
- The programme number is displayed at the bottom of the screen.
- Use the **←** key or the keys numbered **0** to **9** to select the channel to which you want to give a name.

step b Auto name

The **AUTO NAME** function enables you to automatically assign the first 5 characters of a name to a TV channel when teletext is available.

When the TV channel is on the screen:

- Press the green key **2**.
- The lower bar of the menu is displayed in green.
- Press the **←** key to carry out the **AUTO NAME**.
- The first 5 characters of the programme name are displayed. If nothing is displayed, this means that the programme name is not broadcast, go on to **step c**.

step c Select character

- Press the yellow key **3**.
- The character display area appears. A cursor is positioned at the first character.
- Use the **←** key to select the first character.

step d Next position

When the desired character has been chosen:

- Press the blue key **4** to enable the cursor to be moved.
- Use the **←** key to move the cursor to the left or to the right.
- Press the yellow key **3** again.
- Use the **←** key to choose the second character. Repeat the operation as many times as needed to select all characters.

repeat steps **a**, **b**, **c** and **d** for all the TV channels you wish to name

To exit from the **NAMING CHANNELS** menu:

- Press the **4** key.
- The **INSTALLATION 2** menu reappears.

To exit from the **INSTALLATION 2** menu:

- Press the **4** key again.

Special features

Starting from the **MAIN MENU**:

- Press the yellow key **3**.
- The **SPECIAL FEATURES** menu appears on the screen.

Child lock

The child lock function is an electronic lock which disables the keys on the TV set. This function enables you to prevent operation of the TV set (by your children for example). You then simply have to activate the child lock and hide the remote control so that the TV set is unusable.

Starting from the **SPECIAL FEATURES** menu:

- Press the red key **1**.
- The indication **OFF** is displayed at the bottom of the screen.
- Press the **←** key.
- The indication **ON** appears. The keys on the TV set are no longer active.

To check that the child lock is functioning:

- Press the **1** key on the front of the TV set to switch off the set.
- Press the **1** key again to switch on.
- The TV set remains in standby (the red indicator lights up).
- Press one of the keys on the TV set.
- The indication **CHILD LOCK** appears for a few moments and the screen remains black. The only way of switching on the TV set is to use the remote control.

To cancel the child lock:

- Select the function again and reposition the menu display to **OFF**.

Sleeptimer

This function allows you to program the TV set to automatically switch off after a certain period of time.

Starting from the **SPECIAL FEATURES** menu:

- Press the green key **2**.
- The indication **00** is displayed at the bottom of the screen.
- Press the **←** key to program the duration.
- Each time you press the key, the duration increases by 15 minutes (up to 90 minutes).
- Press the **4** key twice to exit from the menu.
- The TV set automatically switches to standby after the programmed time period has elapsed.

To display the remaining time:

- Press the **2** key.
- The remaining time is displayed for a few moments on the screen.

To cancel the programmed switching off:

- Select the function again and reset the menu display to **00**.

Demonstration

The demonstration mode triggers off an automatic display of all the TV set's menus:

- Starting from the **SPECIAL FEATURES** menu:
- Press the yellow key **3**.
- The indication **OFF** appears at the bottom of the screen.
- Press the **←** key to switch on the demonstration mode.
- The indication **DEMONSTRATION** is displayed, the **OPERATION** and **INSTALLATION** menus are displayed automatically one after the other.

To switch off the demonstration mode:

- Press the **4** key.

Calling up the main menu

The main menu gives you access to the adjustments and special features of your TV set.

The **4** key enables you to call up or to exit from the menu.

The coloured keys **1**, **2**, **3**, **4** and **5** allow access to the various choices within the menus. The **←** key enables you to make the adjustments.

To call up the **MAIN MENU**:

- Press the **4** key on the remote control.
- The **MAIN MENU** appears on the screen.

Adjusting the picture

After calling up the **MAIN MENU** (see above):

- Press the red key **1**.
- The **PICTURE** menu appears on the screen.

Brightness, colour, contrast, sharpness

- Press the coloured key **2**, **3**, **4** or **5** corresponding to the adjustment which you want to modify.
- A horizontal scale appears at the bottom of the screen.
- Press the **←** key to make the adjustment.
- The cursor moves according to your adjustment.
- Press the corresponding coloured key to select another adjustment.

Tint

The tint adjustment allows you to influence the colour reproduction by modifying the white reference.

- Press the white key **6**.
- A horizontal scale appears at the bottom of the screen.
- Press the **←** key to make the adjustment.
- For a 'warm' picture (redder whites): move the cursor to the maximum (+) position.
- For a balanced colour reproduction: move the cursor to the middle position.
- For a 'cool' picture (bluer whites): move the cursor to the minimum (-) position.

To exit from the **PICTURE** menu

- Press the **4** key.
- The **MAIN MENU** reappears, move on to "Adjusting the sound".
- To exit from the **MAIN MENU** press the **4** key a second time.

Programme list

This function allows you to consult the list of programme names and numbers of the first 40 channels which you have stored in the **INSTALLATION** menu.

- Press the **4** key.
- The **MAIN MENU** appears on the screen.
- Press the blue key **4**.
- The **PROGRAMME LIST** menu appears on the screen with the list of the first 10 channels.

To display the next page:

- Press the red key **1**.

To display the previous page:

- Press the green key **2**.

Screen size

This function enables you to adapt 16/9 format pictures to the proportions of your screen (4/3).

- Press the **4** key.
- The **MAIN MENU** appears on the screen.
- Press the white key **6**.
- The indication **NORMAL** is displayed at the bottom of the screen.
- Press the **←** key.
- The indication **LARGE** is displayed and a black band appears at the top and bottom of the screen. The picture is reproduced in 16/9 format.

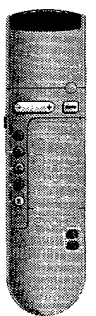
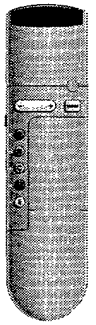
Programmable keys

The remote control has two blue programmable keys **7** and **8**. If you regularly use certain adjustments within the menus (for example the spatial effect, headphone volume, brightness...) it is possible to program direct access to one of these adjustments.

- Press the **4** key.
- The **MAIN MENU** appears on the screen.
- Select the adjustment which you wish to program. For example, to program the spatial effect:
- Press the green key **2** to call up the **SOUND** menu.
- Press the blue key **4** to select **SPATIAL** effect.
- The indication **OFF** or **ON** appears at the bottom of the screen.
- Use the blue keys **7** and **8** instead of the **←** key to make the adjustment.
- The sound is modified. The keys **7** and **8** are automatically programmed.
- Press the **4** key twice to exit from the menu.

To check the function:

- Press the blue keys **7** and **8**.
- Each time the keys are pressed, the spatial effect is switched on or off. From now onwards, these two keys allow you to adjust the spatial effect directly, without using the menus. Carry out the operation on the adjustment of your choice.



Spare parts list / Stükliste / Liste des pièces

<p>1002 Mains filter module [D]</p> <p>Various</p> <p>4822 265 30389 2P male vert yellow 4822 265 30877 3P male vertB 4822 267 40794 3P female vert grey WTB 4822 290 40288 Snap connector 4822 404 31317 Mains filter module bracket 1002 4822 212 30975 Mains filter module</p>	<p>2521 4822 122 32891 68nF 10% 63V 2522 5322 121 42661 330nF 5% 63V 2523 4822 122 31981 33nF +-0.5pF 50V</p> <p>2526 4822 121 51093 6.8nF 5% 250V 2531 4822 121 42408 220nF 5% 63V 2531 4822 121 43396 120nF 5% 63V 2532 4822 124 80066 1µF 20% 63V 2532▲ 4822 124 80067 4.7µF 20% 63V 2533 4822 124 40242 1µF 20% 63V 2534 5322 122 31647 1nF 10% 63V</p>	<p>3512 4822 051 10228 2Ω 5% 0.25W 3518 4822 051 10151 150Ω 2% 0.25W 3520 4822 116 52211 150Ω 5% 0.5W 3521 4822 101 20902 4k7 10% LIN 0.05W</p> <p>3522 4822 051 10152 1k5 2% 0.25W 3524 4822 051 10683 68k 2% 0.25W 3525 4822 100 20169 10k 10% LIN 0.05W</p> <p>3525 4822 100 20644 0.05W 22k 10% LIN</p> <p>3526 4822 050 26803 68k 1% 0.6W</p> <p>3526 4822 050 26804 680k 1% 0.6W 3527 4822 051 10274 270k 2% 0.25W 3528 4822 051 20222 2k2 5% 0.1W 3529 4822 051 10008 0Ω 5% 0.25W 3529 4822 051 10047 470Ω 2% 0.25W 3530 4822 051 10008 0Ω 5% 0.25W 3530 4822 051 10102 1k 2% 0.25W 3531 4822 051 10008 0Ω 5% 0.25W 3531 4822 051 10104 100k 2% 0.25W 3532▲ 4822 051 10103 10k 2% 0.25W</p> <p>3533 4822 116 52207 1k2 5% 0.5W 3533 4822 116 52303 8k2 5% 0.5W 3534▲ 4822 052 10828 8Ω 2% 0.33W 3535 4822 051 10008 0Ω 5% 0.25W 3535 4822 051 10474 470k 2% 0.25W 3571 4822 051 10273 27k 2% 0.25W 3572 4822 051 10153 15k 2% 0.25W 3575 4822 051 10182 1k8 2% 0.25W 3578 4822 116 52245 150k 5% 0.5W 3580▲ 4822 051 10103 10k 2% 0.25W</p> <p>4xxx 4822 051 10008 0Ω 5% 0.25W</p>	<p>7003 4822 212 31626 Euro module (3rd scart + teletext) 1816▲ 4822 252 51169 Fuse 250 mA 1910 4822 242 73552 Crystal 13.875MHz</p> <p>-II-</p> <p>2200 4822 121 51299 1nF 10% 50V 2201▲ 4822 124 40433 47µF 20% 25V 2202 4822 121 51299 1nF 10% 50V 2203▲ 4822 124 40433 47µF 20% 25V 2204 4822 122 31211 100pF 10% 500V 2205 4822 121 51252 470nF 5% 63V 2206 4822 122 31211 100pF 10% 500V 2207 4822 121 51252 470nF 5% 63V 2208 4822 121 51252 470nF 5% 63V 2209 4822 121 51252 470nF 5% 63V</p> <p>2210 4822 121 51252 470nF 5% 63V 2211▲ 4822 124 40433 47µF 20% 25V 2212▲ 4822 124 40433 47µF 20% 25V 2213 4822 121 41857 10nF 5% 250V 2214 4822 121 41857 10nF 5% 250V 2215 5322 124 41431 22µF 20% 35V 2216 5322 124 41431 22µF 20% 35V 2217 4822 124 40198 47µF 20% 16V 2218 5322 124 41431 22µF 20% 35V 2219 5322 124 41431 22µF 20% 35V</p> <p>2220 4822 122 31116 2.2nF 10% 500V 2221 4822 122 31116 2.2nF 10% 500V 2222 4822 122 31116 2.2nF 10% 500V 2223 4822 122 31116 2.2nF 10% 500V 2800 4822 124 41643 100µF 20% 16V 2805 4822 124 40198 470µF 20% 16V 2806 5322 124 41431 22µF 20% 35V 2807▲ 4822 124 40246 4.7µF 20% 63V 2808▲ 4822 124 40246 4.7µF 20% 63V 2810 4822 124 41643 100µF 20% 16V</p> <p>2813▲ 4822 124 40246 4.7µF 20% 63V 2814 4822 121 41856 22nF 5% 250V 2822 4822 126 13161 100nF 10% 25V 2825 4822 122 32139 12pF 2% 63V 2826 4822 122 32139 12pF 2% 63V 2830 5322 121 42386 100nF 5% 63V 2832 5322 122 32531 100pF 5% 50V 2833▲ 4822 124 40196 220µF 20% 16V 2834 4822 126 12944 47nF 10% 50V 2835▲ 4822 124 40246 4.7µF 20% 63V</p> <p>2837 5322 122 32689 6.8pF 5% 50V 2838 4822 124 41643 100µF 20% 16V 2890 4822 126 13161 100nF 10% 25V 2900▲ 4822 124 40246 4.7µF 20% 63V 2901▲ 4822 124 40433 47µF 20% 25V 2908 4822 122 31211 100pF 10% 500V 2909 4822 122 31211 100pF 10% 500V 2910▲ 4822 122 33177 10nF 20% 50V 2911 5322 126 10794 220pF 5% 63V 2912 5322 122 32481 15pF 5% 50V</p> <p>2913 5322 122 32481 15pF 5% 50V 2914 4822 126 13161 100nF 10% 25V 2915 4822 126 13161 100nF 10% 25V 2916 5322 126 10794 220pF 5% 63V 2917▲ 4822 122 33177 10nF 20% 50V 2918 5322 122 32452 47pF 5% 63V 2920 4822 126 13161 100nF 10% 25V 2925▲ 4822 122 33177 10nF 20% 50V 2926 5322 124 41431 22µF 20% 35V 2927 4822 124 41643 100µF 20% 16V</p>
<p>1005 Picture tube (CRT) module [E]</p> <p>Various</p> <p>4822 265 31133 3P male white 4822 265 30378 4P male grey 4822 265 50824 4P female grey 4822 290 40283 5P male grey 4822 290 40287 5P female green 4822 290 40295 7P male grey 4822 267 51275 7P female white 4822 265 40252 7P female grey 4822 267 51033 Single connector 4822 492 70871 Spring 4822 256 91879 Holder 4822 255 70261 CRT-socket 1005 4822 212 31629 CRT module 90° narrow neck 1005 4822 212 31628 CRT module 110° BL-S</p>	<p>3301 4822 051 10131 130Ω 2% 0.25W 3302 4822 051 10182 1k8 2% 0.25W 3302 4822 051 10362 3k6 2% 0.25W 3303▲ 4822 051 10242 2k4 2% 0.25W 3303 4822 051 10272 2k7 2% 0.25W 3304 4822 116 52239 120k 5% 0.5W 3305 4822 051 10154 150k 2% 0.25W 3305 4822 051 10823 82k 2% 0.25W 3306▲ 4822 116 52219 330Ω 5% 0.5W 3309 4822 051 10108 1Ω 5% 0.25W</p> <p>3309 4822 051 10479 47Ω 2% 0.25W 3310▲ 4822 116 52219 330Ω 5% 0.5W 3311▲ 4822 053 12153 15k 5% 3W 3312▲ 4822 052 10271 270Ω 5% 0.33W 3313▲ 4822 052 10271 270Ω 5% 0.33W 3314 4822 050 21502 1k5 1% 0.6W 3315 4822 051 10184 180k 2% 0.25W 3315 4822 051 10823 82k 2% 0.25W 3316 4822 051 10224 220k 2% 0.25W 3316 4822 051 10823 82k 2% 0.25W</p> <p>3331 4822 051 10131 130Ω 2% 0.25W 3332 4822 051 10182 1k8 2% 0.25W 3332 4822 051 10362 3k6 2% 0.25W 3333 4822 116 52259 2k4 5% 0.5W 3333▲ 4822 116 52263 2k7 5% 0.5W 3334 4822 116 52239 120k 5% 0.5W 3338 4822 051 10108 1Ω 5% 0.25W 3338 4822 051 10479 47Ω 2% 0.25W 3340▲ 4822 116 52219 330Ω 5% 0.5W 3341▲ 4822 053 12153 15k 5% 3W</p> <p>3342▲ 4822 052 10271 270Ω 5% 0.33W 3343▲ 4822 052 10271 270Ω 5% 0.33W 3344 4822 050 21502 1k5 1% 0.6W 3345 4822 051 10681 680Ω 2% 0.25W 3361 4822 116 52208 130Ω 5% 0.5W 3362 4822 051 10182 1k8 2% 0.25W 3362 4822 051 10362 3k6 2% 0.25W 3364▲ 4822 051 10472 4k7 2% 0.25W 3368 4822 051 10108 1Ω 5% 0.25W 3368 4822 051 10479 47Ω 2% 0.25W</p> <p>3370▲ 4822 116 52219 330Ω 5% 0.5W 3371▲ 4822 053 12153 15k 5% 3W 3372▲ 4822 052 10271 270Ω 5% 0.33W 3373▲ 4822 052 10271 270Ω 5% 0.33W 3374 4822 050 21502 1k5 1% 0.6W 3375 4822 051 10184 180k 2% 0.25W 3375 4822 051 10823 82k 2% 0.25W 3376 4822 051 10224 220k 2% 0.25W 3376 4822 051 10823 82k 2% 0.25W 3382 4822 051 10102 1k 2% 0.25W</p> <p>3383 4822 116 52284 47k 5% 0.5W 3384 4822 116 52277 39k 5% 0.5W 3385 4822 051 10473 47k 2% 0.25W 3391 4822 116 52284 47k 5% 0.5W 3392 4822 051 10123 12k 2% 0.25W 3395 4822 051 10122 1k2 2% 0.25W 3396 4822 051 10104 100k 2% 0.25W 3398 4822 051 10008 0Ω 5% 0.25W 3411 4822 116 52222 390Ω 5% 0.5W 3413 4822 116 52222 390Ω 5% 0.5W</p> <p>3414 4822 051 10439 43Ω 2% 0.25W 3415 4822 116 52222 390Ω 5% 0.5W 3421 4822 051 10154 150k 2% 0.25W 3424 4822 051 20222 2k2 5% 0.1W 3431▲ 4822 052 10181 180Ω 5% 0.33W 3431▲ 4822 052 10271 270Ω 5% 0.33W 3432▲ 4822 052 10229 22Ω 5% 0.33W 3433▲ 4822 052 10128 1Ω 2% 0.33W 3433▲ 4822 052 10188 1Ω 5% 0.33W 3434 4822 050 21502 1k5 1% 0.6W</p> <p>3435 4822 050 21502 1k5 1% 0.6W 3436 4822 053 20825 8MΩ 5% 0.25W 3442 4822 116 52239 120k 5% 0.5W 3443▲ 4822 051 10242 2k4 2% 0.25W 3443 4822 051 10272 2k7 2% 0.25W 3446 4822 051 10683 68k 2% 0.25W 3447 4822 051 10102 1k 2% 0.25W 3448 4822 051 10008 0Ω 5% 0.25W 3455 4822 051 10102 1k 2% 0.25W 3456 4822 050 11002 1k 1% 0.4W</p> <p>3457 4822 051 10244 240k 2% 0.25W</p>	<p>5401 4822 156 20966 47µH 5401 4822 157 71295 100µH 5530 4822 152 20559 390µH 10%</p> <p>-II-</p> <p>6301 4822 130 30842 BAV21 6302 4822 130 81015 LLZ-C10 6303 4822 130 80877 BAV103 6303 4822 130 80877 BAV103 6345 4822 130 82192 LLZ-C8V2 6361 4822 130 30842 BAV21 6368 4822 130 80446 LL4148 6411 4822 130 32831 BZX79-F3V0 6421▲ 4822 130 30621 1N4148 6422 4822 130 81512 LLZ-C6V2</p> <p>6423 4822 130 34382 BZX79-F8V2 6518 4822 130 80446 LL4148 6519 4822 130 80446 LL4148</p> <p>7302 4822 130 41773 BF869 7303▲ 5322 130 41982 BC848B 7304 4822 130 41782 BF422 7305 4822 130 41646 BF423 7331 4822 130 41773 BF869 7333▲ 5322 130 41982 BC848B 7334 4822 130 41782 BF422 7335 4822 130 41646 BF423 7345 5322 130 41983 BC858B 7361 4822 130 41773 BF869</p> <p>7363▲ 5322 130 41982 BC848B 7364 4822 130 41782 BF422 7365 4822 130 41646 BF423 7383 4822 130 41782 BF422 7391 4822 130 41646 BF423 7411 4822 130 40937 BC548B 7530 5322 130 60159 BC846B 7533 4822 130 63015 BD440 7534 4822 130 44283 BC636 7537▲ 5322 130 41982 BC848B</p> <p>7538▲ 5322 130 41982 BC848B</p>	<p>3200 4822 116 52211 150Ω 5% 0.5W 3201 4822 051 20563 56k 5% 0.1W 3202 4822 116 52211 150Ω 5% 0.5W 3203 4822 051 20563 56k 5% 0.1W 3204 4822 050 11002 1k 1% 0.4W 3205 4822 050 11002 1k 1% 0.4W 3206 4822 051 20334 330k 5% 0.1W 3207 4822 051 20334 330k 5% 0.1W 3208▲ 4822 116 52272 330k 5% 0.5W 3209 4822 051 20334 330k 5% 0.1W</p> <p>3210 4822 051 20333 33k 5% 0.1W 3211 4822 051 20332 3k3 5% 0.1W 3212 4822 051 20333 3k3 5% 0.1W 3213 4822 051 20332 3k3 5% 0.1W 3214 4822 051 20563 56k 5% 0.1W 3215 4822 051 20563 56k 5% 0.1W 3216 4822 116 52201 75Ω 5% 0.5W 3217 4822 116 52201 75Ω 5% 0.5W 3218 4822 050 20153 15k 5% 0.1W 3220 4822 051 20153 15k 5% 0.1W</p> <p>3222 4822 051 20562 5k6 5% 0.1W 3223 4822 051 20562 5k6 5% 0.1W 3224 4822 051 20562 5k6 5% 0.1W</p>
<p>1003 Euro module [F]</p> <p>Various</p> <p>4822 267 30631 2P cinch female 4822 267 50621 7P male white ▲ 4822 267 50721 9P male white ▲ 4822 267 60243 Euroconnector blue 4822 256 91879 Holder 1003 4822 212 31624 Euro module (non teletext) 1003 4822 212 31625 Euro module (teletext)</p>			

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BTB = Board To Board; WTB = Wire To Board

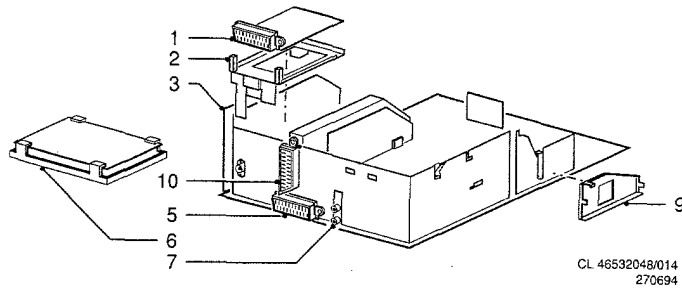
PCS 41 612

3966	4822 051 20332	3k3 5% 0.1W
3967	4822 051 20104	100k 5% 0.1W
3968	4822 051 20104	100k 5% 0.1W
3969	4822 051 20683	68k 5% 0.1W
3970	4822 051 20683	68k 5% 0.1W
3971	4822 051 20153	15k 5% 0.1W
3972	4822 116 52233	10k 5% 0.5W
3973	4822 051 20222	2k2 5% 0.1W
3974	4822 116 80173	10k 5% 0.5W
3975	4822 116 52201	75Ω 5% 0.5W
3976	4822 050 11002	1k 1% 0.4W
3977	4822 116 52175	100Ω 5% 0.5W
3978	4822 116 52201	75Ω 5% 0.5W
3979	4822 116 52175	100Ω 5% 0.5W
3980	4822 051 20221	220Ω 5% 0.1W
3981	4822 051 20471	470Ω 5% 0.1W
3982	4822 051 20101	100Ω 5% 0.1W
3983	4822 051 20471	470Ω 5% 0.1W
3985	4822 116 52256	2k2 5% 0.5W
3986	4822 116 52296	6k8 5% 0.5W
3987	4822 116 80175	4k7 5% 0.5W
3988	4822 051 20182	1k8 5% 0.1W
3989	4822 051 20182	1k8 5% 0.1W
3990	4822 116 52175	100Ω 5% 0.5W
3991	4822 116 52211	150Ω 5% 0.5W
3992	4822 116 52211	150Ω 5% 0.5W

5950 4822 157 53634 5.6μH 10%

6950 4822 130 80446 LL4148

7950	5322 209 10576	HEF4053BP
7951	5322 130 42136	BC848C
7952	5322 130 42136	BC848C
7953	5322 130 42136	BC848C
7954	5322 130 42136	BC848C
7975	5322 130 42136	BC848C
7976	5322 130 42136	BC848C
7977	4822 130 42513	BC858C
7978	4822 130 42513	BC858C
7979	5322 130 42136	BC848C



CL 465320+8/014
270694

Mechanical parts list

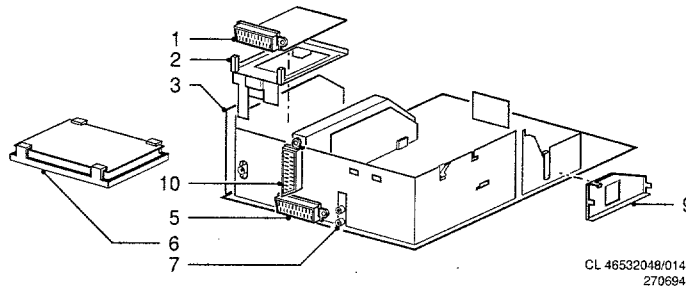
1	4822 267 60366	Third scart euroconnector
2	4822 404 31322	3 rd scart holder
3		Not applicable
5	4822 267 60243	Euroconnector
6	4822 403 70926	Sep. mains holder
7	4822 267 30631	2 Fold cinch
9	4822 404 31317	Mains filter bracket
10	4822 267 60243	Euroconnector

3966	4822 051 20332	3k3 5% 0.1W
3967	4822 051 20104	100k 5% 0.1W
3968	4822 051 20104	100k 5% 0.1W
3969	4822 051 20683	68k 5% 0.1W
3970	4822 051 20683	68k 5% 0.1W
3971	4822 051 20153	15k 5% 0.1W
3972▲	4822 116 52233	10k 5% 0.5W
3973	4822 051 20222	2k2 5% 0.1W
3974	4822 116 80173	10k 5% 0.5W
3975	4822 116 52201	75Ω 5% 0.5W
3976	4822 050 11002	1k 1% 0.4W
3977	4822 116 52175	100Ω 5% 0.5W
3978	4822 116 52201	75Ω 5% 0.5W
3979	4822 116 52175	100Ω 5% 0.5W
3980	4822 051 20221	220Ω 5% 0.1W
3981	4822 051 20471	470Ω 5% 0.1W
3982	4822 051 20101	100Ω 5% 0.1W
3983	4822 051 20471	470Ω 5% 0.1W
3985▲	4822 116 52256	2k2 5% 0.5W
3986	4822 116 52296	6k8 5% 0.5W
3987	4822 116 80175	4k7 5% 0.5W
3988	4822 051 20182	1k8 5% 0.1W
3989	4822 051 20182	1k8 5% 0.1W
3990	4822 116 52175	100Ω 5% 0.5W
3991	4822 116 52211	150Ω 5% 0.5W
3992	4822 116 52211	150Ω 5% 0.5W

5950 4822 157 53634 5.6μH 10%

6950 4822 130 80446 LL4148

7950	5322 209 10576	HEF4053BP
7951	5322 130 42136	BC848C
7952	5322 130 42136	BC848C
7953	5322 130 42136	BC848C
7954	5322 130 42136	BC848C
7975	5322 130 42136	BC848C
7976	5322 130 42136	BC848C
7977	4822 130 42513	BC858C
7978	4822 130 42513	BC858C
7979	5322 130 42136	BC848C



CL 46532048/014
270694

Mechanical parts list

1	4822 267 60366	Third scart euroconnector
2	4822 404 31322	3 rd scart holder
3		Not applicable
5	4822 267 60243	Euroconnector
6	4822 403 70926	Sep. mains holder
7	4822 267 30631	2 Fold cinch
9	4822 404 31317	Mains filter bracket
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