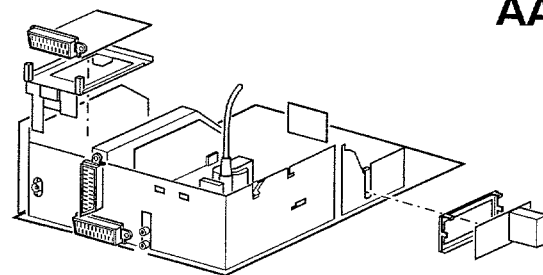


Service  
Service  
Service

GR 2.4  
AA



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270694

# Service Manual

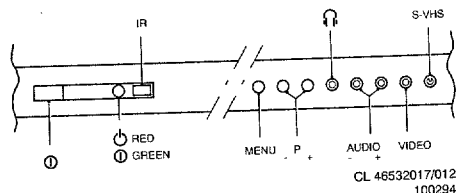
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## 1. Technical specification

Mains voltage	:220 - 240 V ( $\pm 10\%$ )
Mains frequency	:50 Hz ( $\pm 10\%$ )
Aerial input impedance	:75 $\Omega$ - coax
Minimum aerial voltage	:32 $\mu$ V
Maximum aerial voltage	:32mV
Pull-in range colour synchronization	: $\pm 300$ Hz
Pull-in range horizontal synchronization	: $\pm 300$ 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)
  - I<sup>2</sup>C bus fault in  $\mu$ P (flashing white)

## 2. Connection facilities

### 1. Specification of the terminal sockets

#### EXT1/EXT2

1	- Audio	$\odot$ R (0,5V <sub>RMS</sub> ; 1k $\Omega$ )
2	- Audio	$\ominus$ R (0,2 - 2V <sub>RMS</sub> ; 0,5 V <sub>nom</sub> ; $\geq 10$ k $\Omega$ )
3	- Audio	$\odot$ L (0,5V <sub>RMS</sub> ; 1k $\Omega$ )
4	- Audio	$\perp$
5	- Blue	$\perp$
6	- Audio	$\ominus$ L (0,2 - 2V <sub>RMS</sub> ; 0,5 V <sub>nom</sub> ; $\geq 10$ k $\Omega$ )
7	- Blue	$\ominus$ (0,7V <sub>pp</sub> /75 $\Omega$ )
8	- CVBS-Status	(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 <sub>pp</sub> ; 75 $\Omega$ )
12	--	
13	- Red	$\perp$
14	--	
15	- Red /	$\ominus$ (0,7V <sub>pp</sub> ; 75 $\Omega$ )
15	- C-SVHS	$\ominus$ (0,3V <sub>pp</sub> ; 75 $\Omega$ )
16	- Status	(0-0,4V: FB-OFF; 1-3V: FB-ON; 75 $\Omega$ )
17	- CVBS	$\odot$ $\perp$
18	- CVBS	$\ominus$ $\perp$
19	- CVBS	$\odot$ (1V <sub>pp</sub> /75 $\Omega$ )
20	- CVBS	$\ominus$ (1V <sub>pp</sub> /75 $\Omega$ ){EXT1}
20	- CVBS/	
	Y-SVHS	$\ominus$ (1V <sub>pp</sub> /75 $\Omega$ ){EXT2}
21	- Earth screen	

#### EXT4

1	- $\perp$	
2	- $\perp$	
3	- Y	$\ominus$ (1V <sub>pp</sub> ; 75 $\Omega$ )
4	- C	$\ominus$ (1V <sub>pp</sub> ; 75 $\Omega$ )
2x $\odot$	CINCH Audio	$\ominus$ L+R (0,2-2V <sub>RMS</sub> ; 0,5 V <sub>nom</sub> $\geq 10$ k $\Omega$ )
1x $\odot$	CINCH CVBS	$\ominus$ (1V <sub>pp</sub> ; 75 $\Omega$ )

#### EXT3

1	- Audio	$\odot$ R (0,5V <sub>RMS</sub> ; 1k $\Omega$ )
2	- Audio	$\ominus$ R (0,2 - 2V <sub>RMS</sub> ; 0,5 V <sub>nom</sub> ; $\geq 10$ k $\Omega$ )
3	- Audio	$\odot$ L (0,5V <sub>RMS</sub> ; 1k $\Omega$ )
4	- Audio	$\perp$
5	- $\perp$	
6	- Audio	$\ominus$ L (0,2 - 2V <sub>RMS</sub> ; 0,5 V <sub>nom</sub> ; $\geq 10$ k $\Omega$ )
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 <sub>pp</sub> /75 $\Omega$ )
20	- CVBS	$\ominus$ (1V <sub>pp</sub> /75 $\Omega$ )
21	- Earth screen	

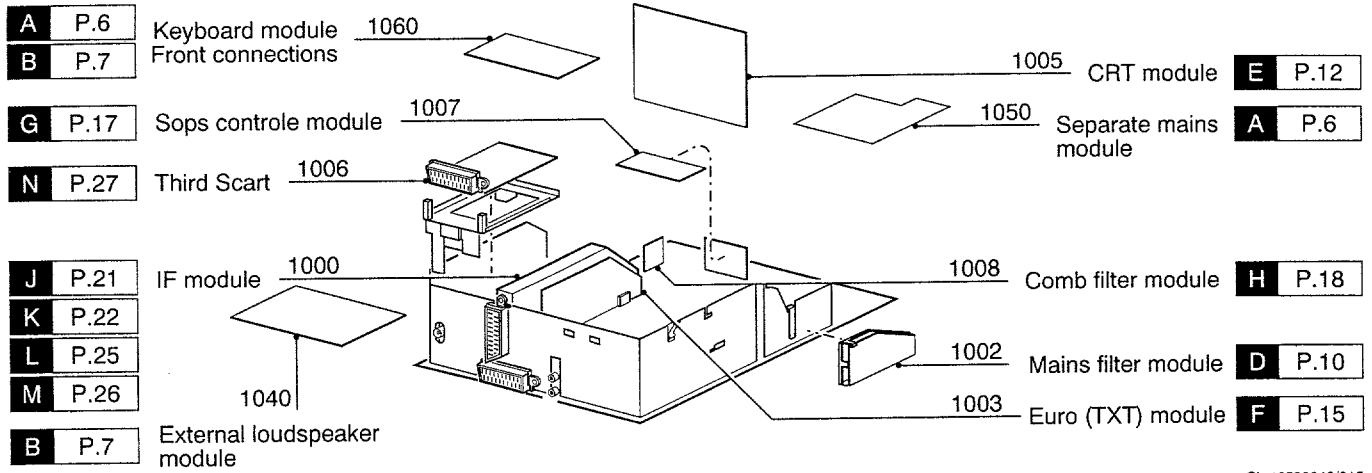
#### Audio out

2x  $\odot$  CINCH Audio  $\odot$  L+R (0,5V<sub>RMS</sub>; 1k $\Omega$ )

#### Front

$\odot$   $\frac{d}{i}$  8 $\Omega$   
3,6mm / 11


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.

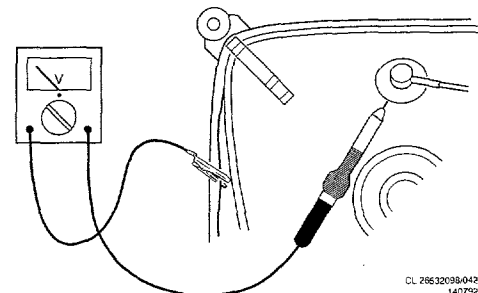


Fig. 3.1

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140792

P.12

P.6

P.18

P.10

P.15

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## 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.

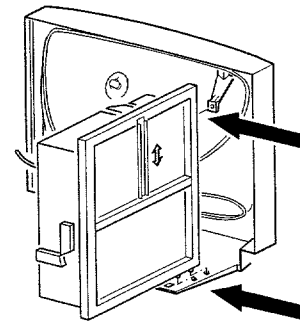
### 3. Service position 2

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).

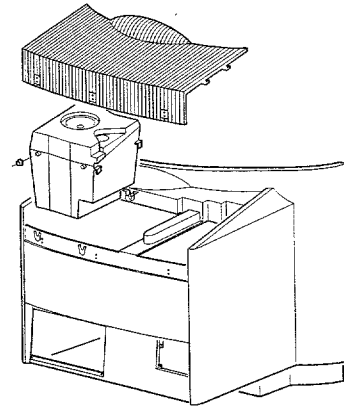
Or in case of FL4 cabinet there is a service hook where the chassis with bracket can be hung on (see fig. 4.1). Be careful with the wiring!!

**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 !**



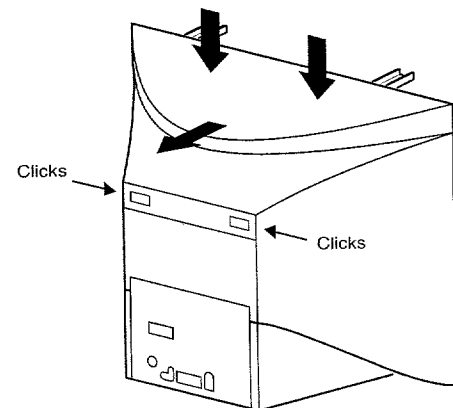
CL 46532048/019  
270694

Fig. 4.1



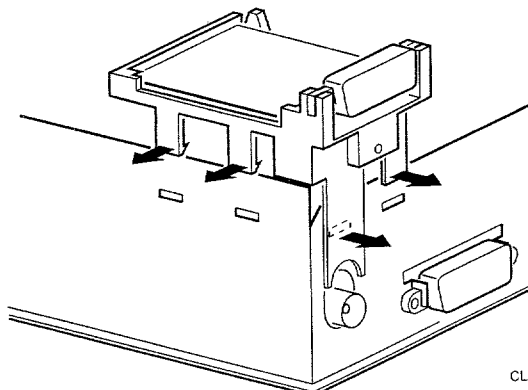
46532048/017  
290694

Fig. 4.2a



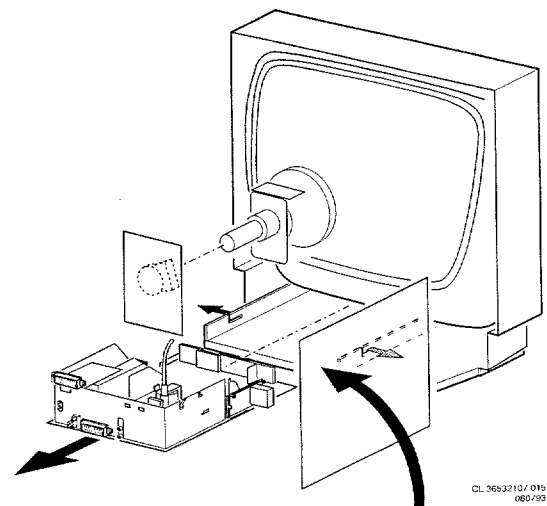
CL 3653107 018  
191094

Fig. 4.2b



CL 36532107/014  
290693

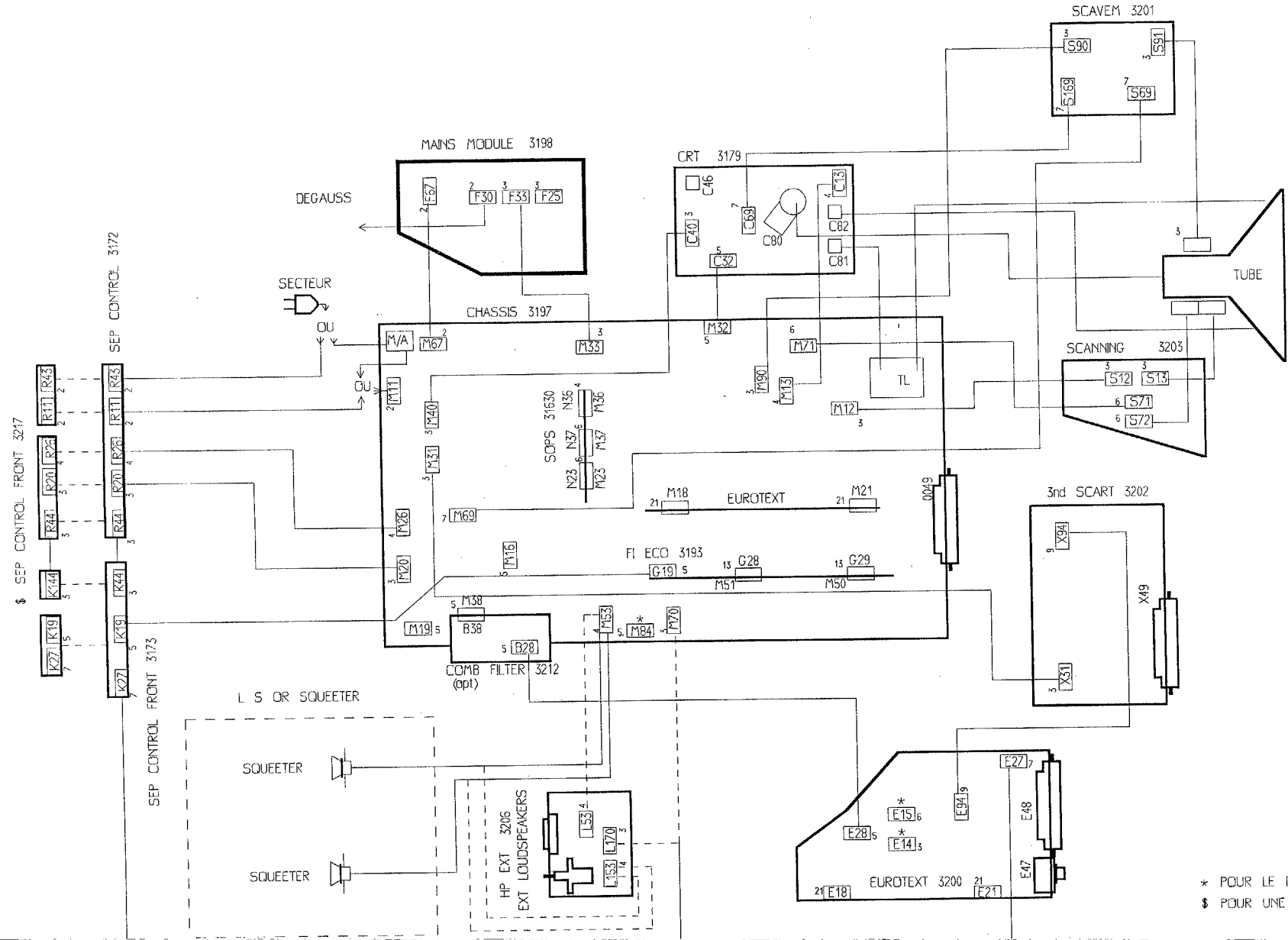
Fig. 4.3



CL 36532107 015  
060/93

Fig. 4.4

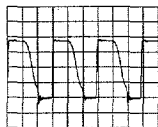
# Wiring diagram/Verdrahtungsschema/Schema de câblage



\* POUR LE DOLBY  
 § POUR UNE ESTHETIQUE 29" ( 379 )

TP1 = DC 15V9  
TP2 = DC -15V9

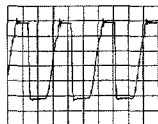
TP3



20V/div AC  
5μs div

TP4 = DC 9V7

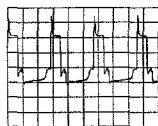
TP5



5V/div AC  
5μs div

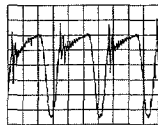
TP6 = DC 4V8  
TP7 = DC 298V

TP8



2V/div AC  
5μs div

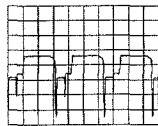
TP9



0.2V/div AC  
5μs div

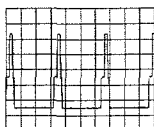
TP10 = DC 2V4  
TP11 = DC 0V  
TP12 = DC 2V7

TP14



2V/div AC  
20μs div

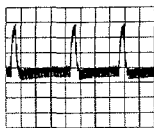
TP16



2V/div AC  
20μs div

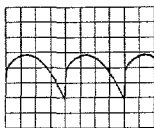
TP17 = DC 0V

TP18



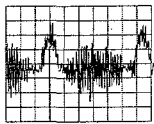
2V/div AC  
5ms div

TP19



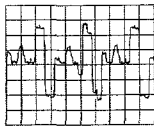
1V/div AC  
5ms div

TP20



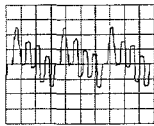
20mV/div AC  
10μs div

TP21



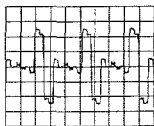
0.1V/div AC  
20μs div

TP22



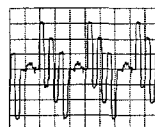
0.2V/div AC  
20μs div

TP23



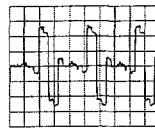
0.2V/div AC  
20μs div

TP24



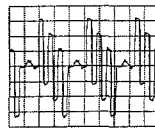
0.2V/div AC  
20μs div

TP25



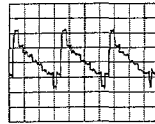
0.2V/div AC  
20μs div

TP26



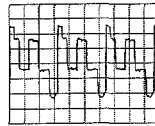
0.2V/div AC  
20μs div

TP27



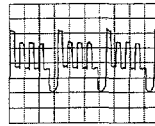
0.1V/div AC  
20μs div

TP28



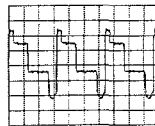
0.5V/div AC  
20μs div

TP29



0.5V/div AC  
20μs div

TP30



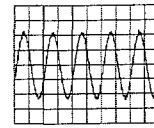
0.5V/div AC  
20μs div

TP31



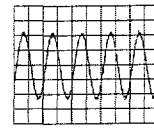
10mV/div AC  
0.5ms div

TP32



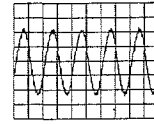
10mV/div AC  
0.5ms div

TP33



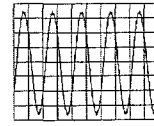
10mV/div AC  
0.5ms div

TP34



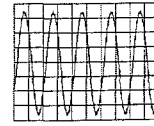
10mV/div AC  
0.5ms div

TP35



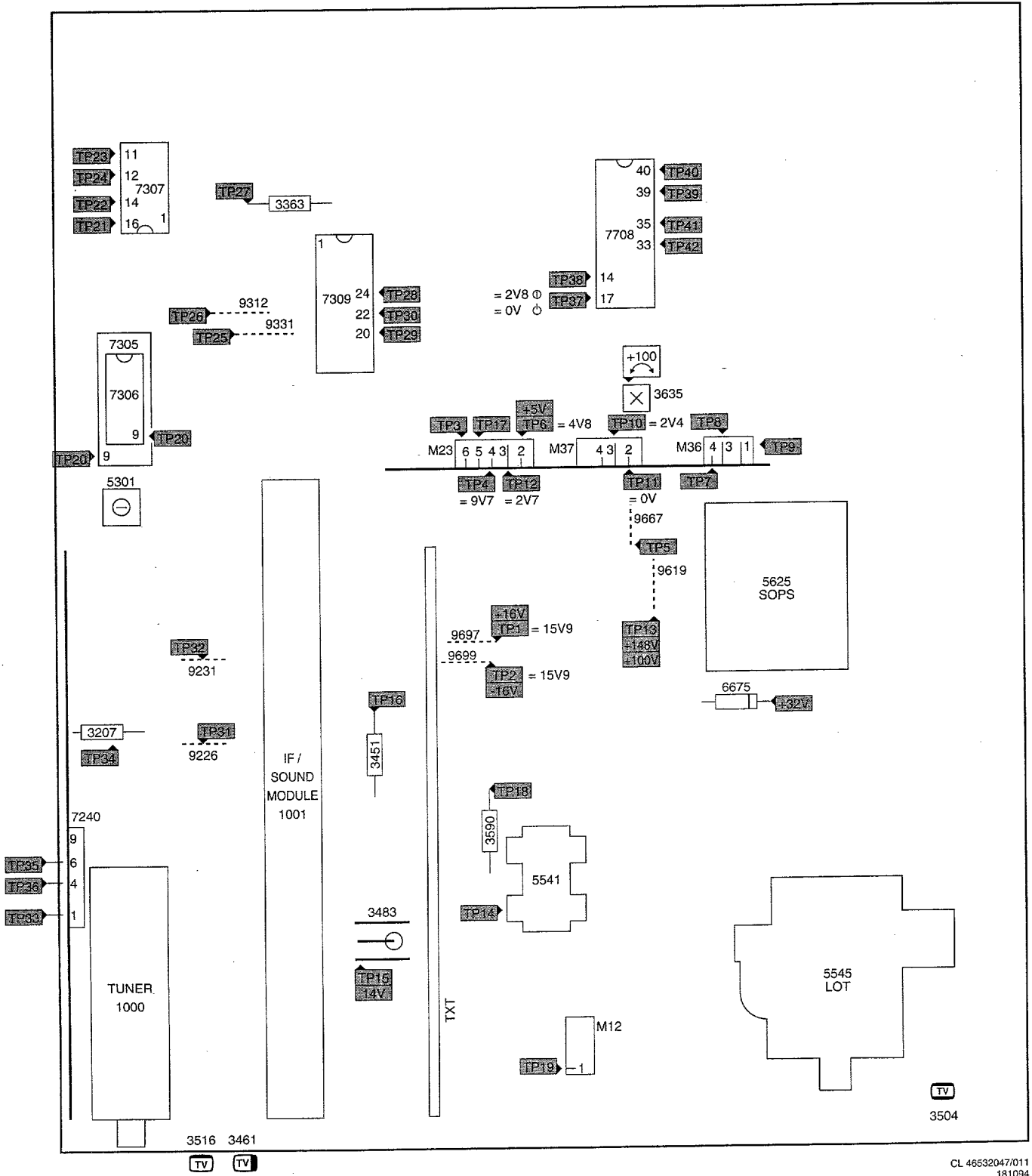
200mV/div AC  
0.5ms div

TP36

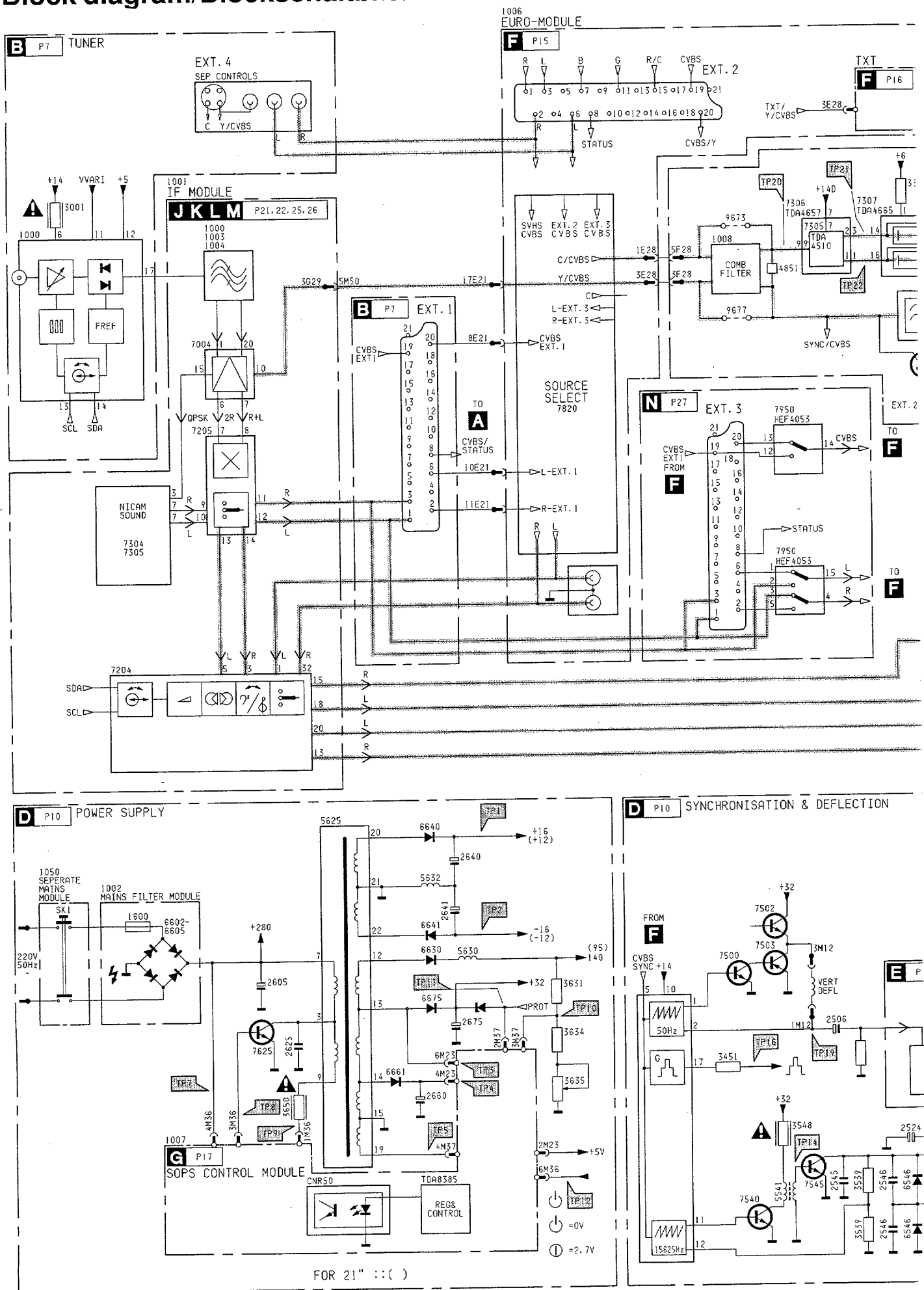


200mV/div AC  
0.5ms div

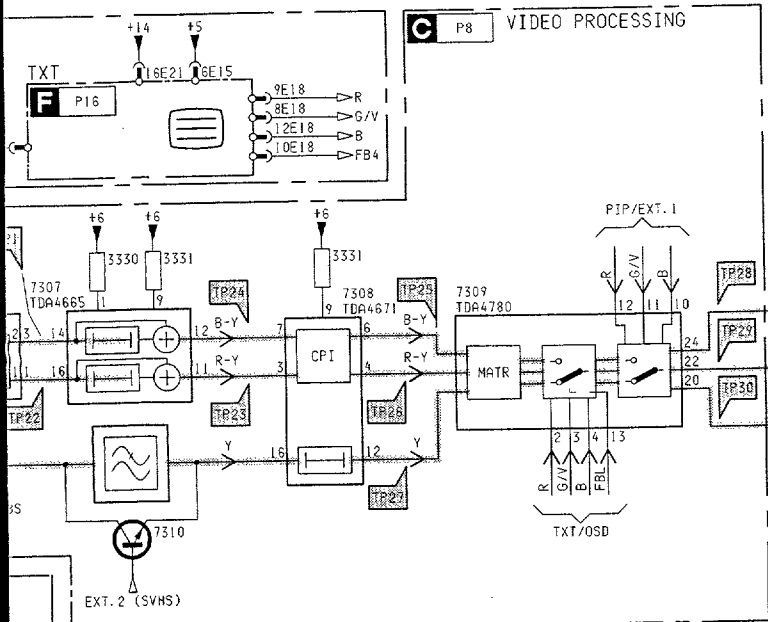
# Test point overview/Übersicht Teststellen/Tableau des points à tester



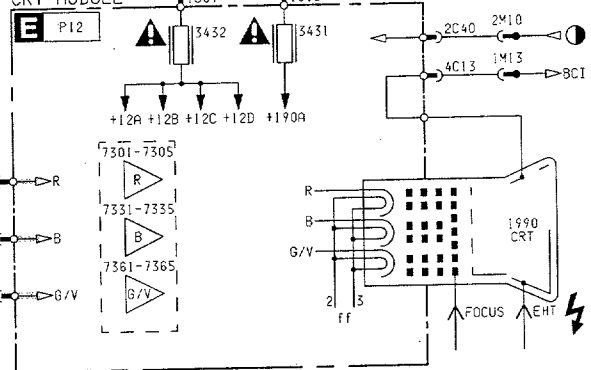




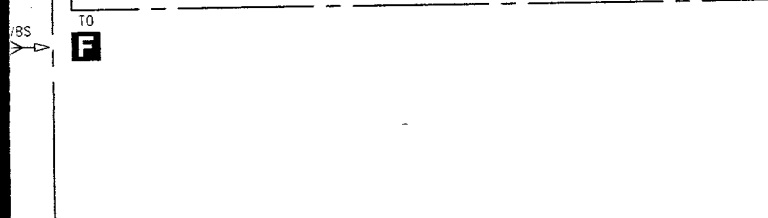
**C** P8 VIDEO PROCESSING



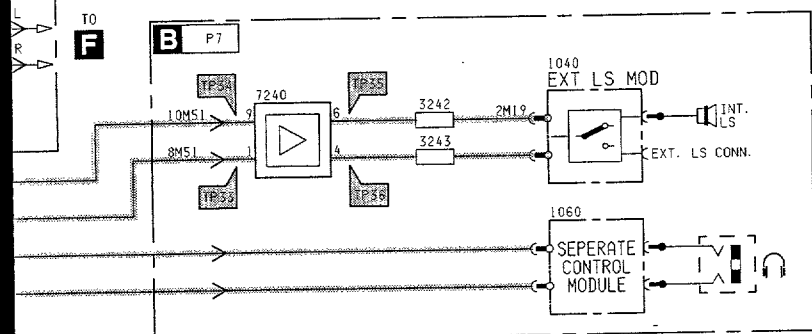
**E** P12 1005 CRT MODULE



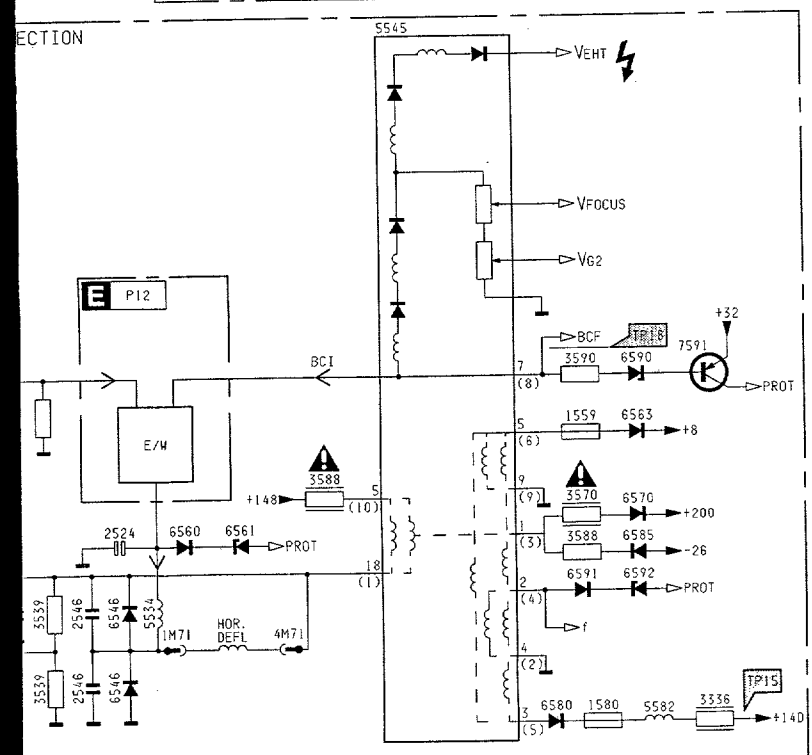
**F**



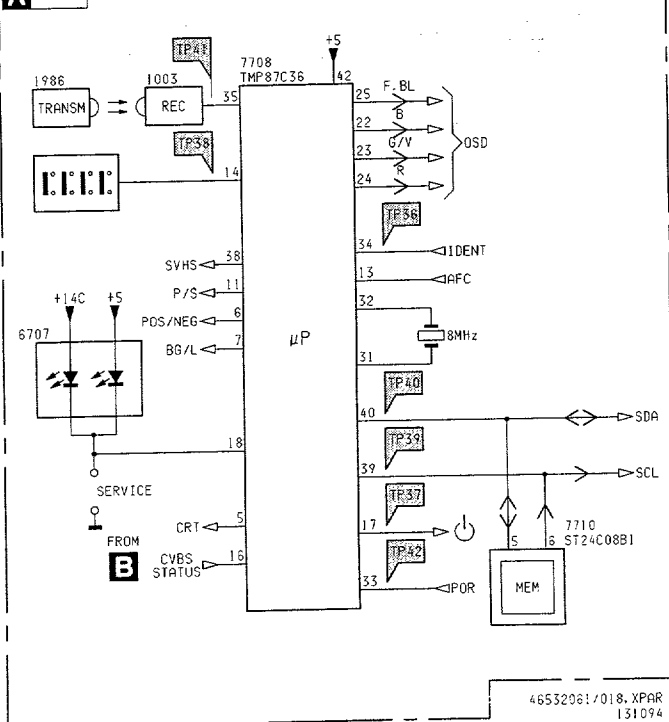
**F**



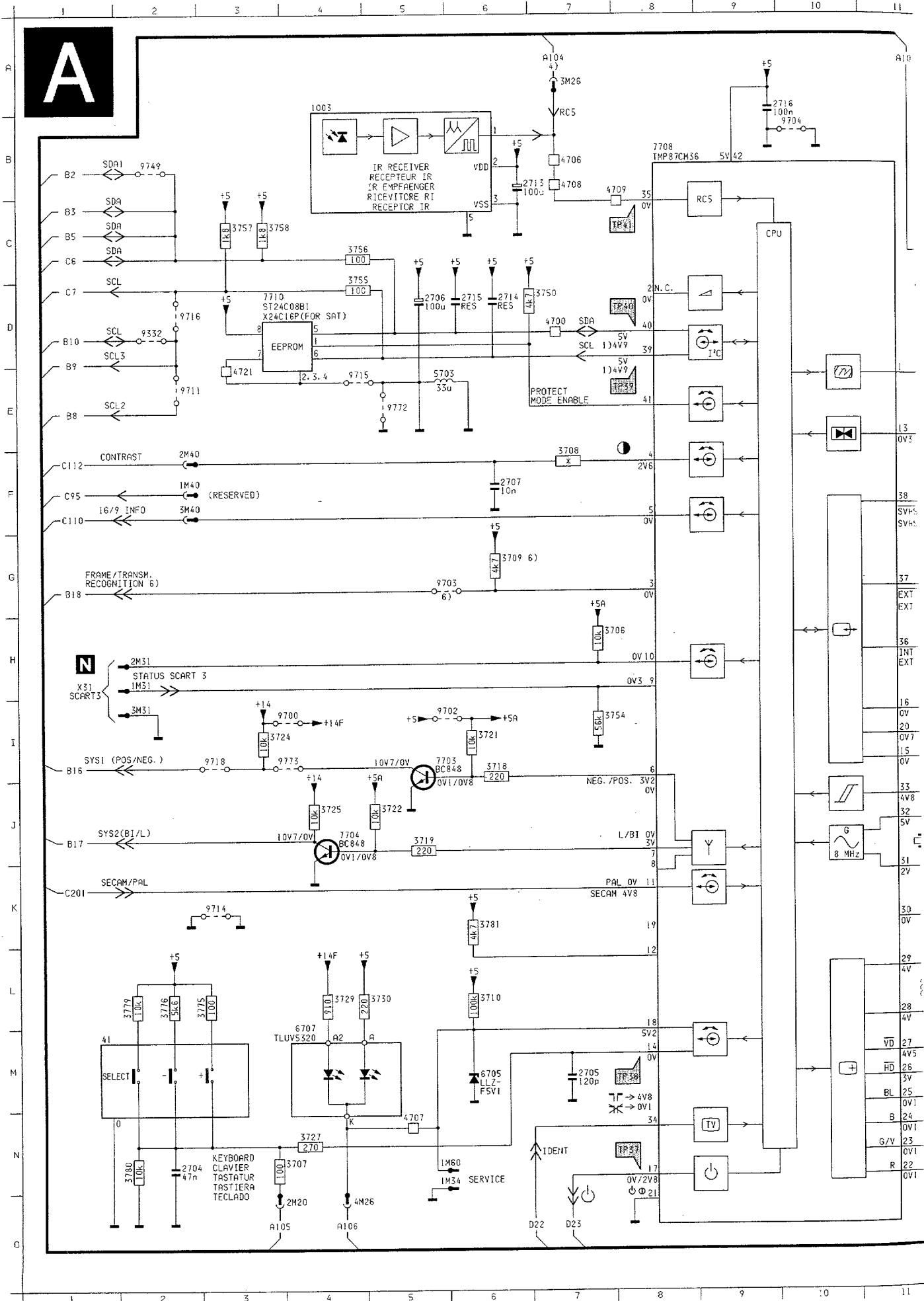
SECTION

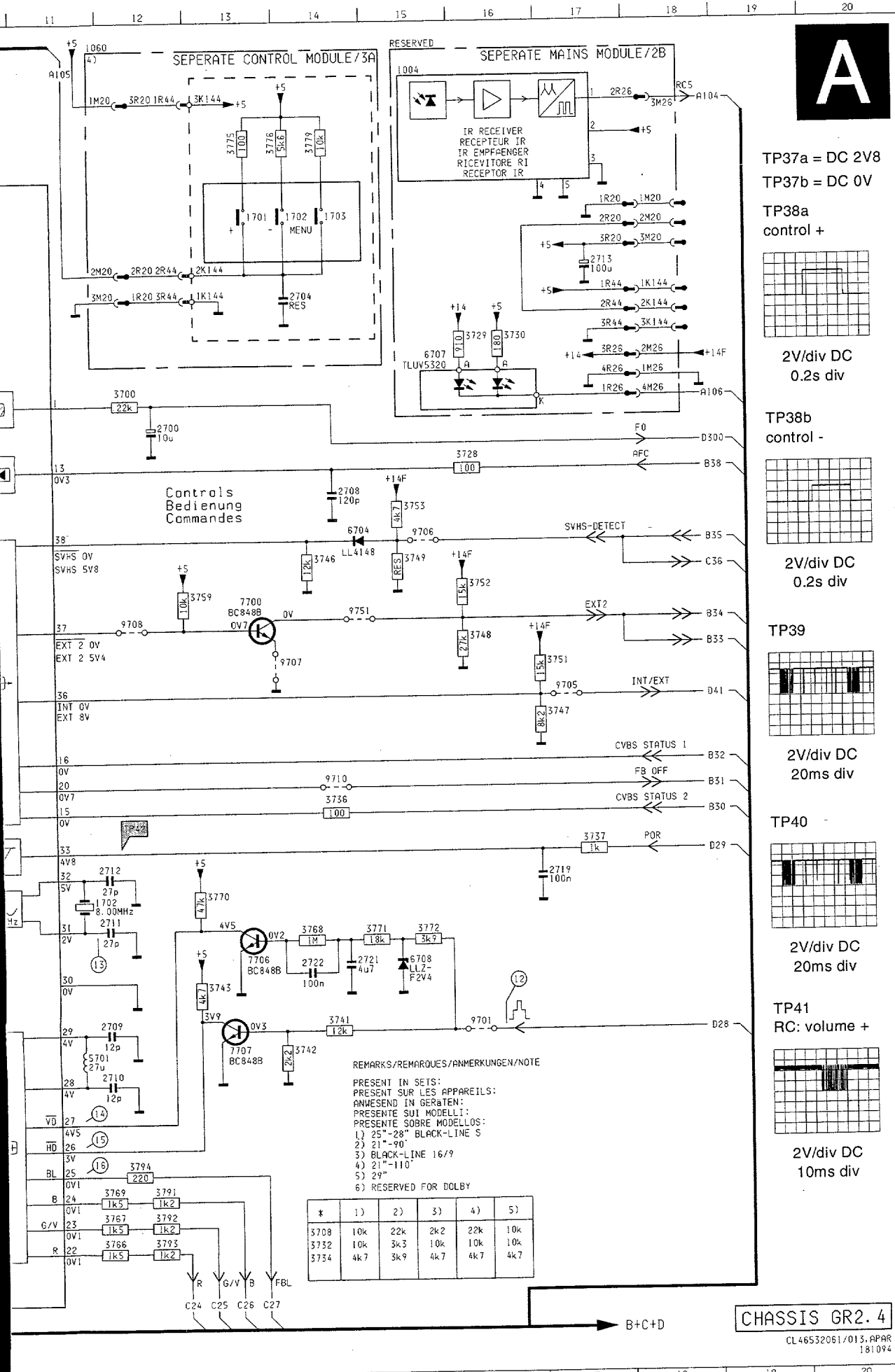


**A** P6 CONTROLS



46532061/018.XPAR  
131094





1003	A 4	9714	K 3
1004	A15	9715	E 4
1060	A11	9716	D 2
1701	B13	9718	I 3
1702	B14	9749	B 2
1703	B11	9751	G14
1705	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		
2715	D 6		
2716	A 9		
2719	J17		
2721	K14		
2722	K14		
3700	H12		
3706	E 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 8		
3736	I14		
3737	J17		
3741	L14		
3742	L14		
3743	K13		
3746	F14		
3747	H17		
3748	G16		
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		
3777	B14		
3779	L 2		
3780	N 2		
3781	K 6		
3791	N12		
3792	N12		
3793	N12		
3794	M12		
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		
6707	M 4		
6708	K15		
7700	G13		
7703	I 5		
7704	J 4		
7706	K13		
7707	L13		
7708	B 8		
7710	D 3		
9332	D 2		
9700	I 4		
9701	L16		
9702	I 5		
9705	B 5		
9704	B10		
9705	H17		
9706	F15		
9707	H14		
9708	G12		
9710	I14		
9711	E 2		

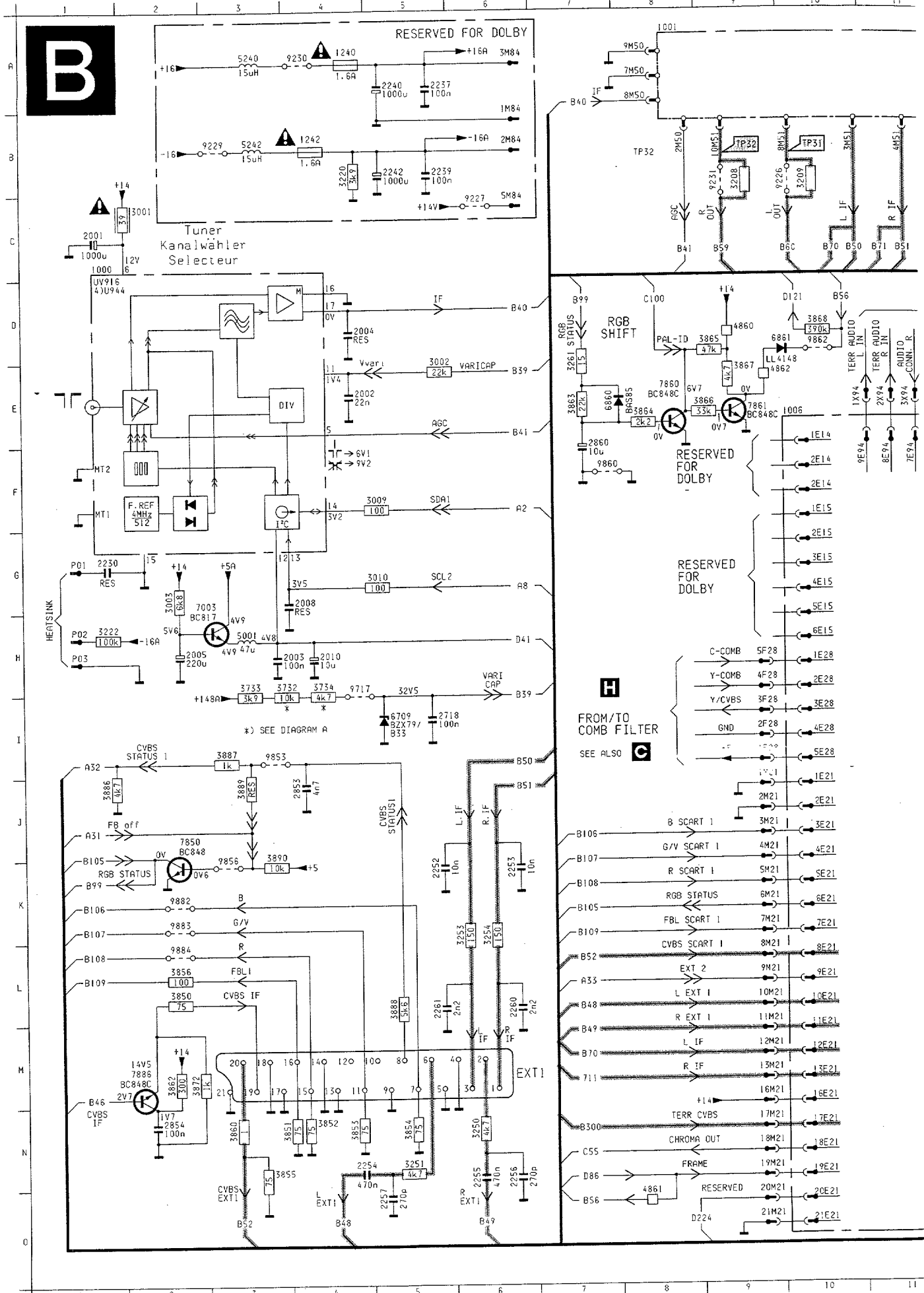
REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:  
PRESENT SUR LES APPAREILS:  
ANWESEND IN GERÄTEN:  
PRESENTI SUI MODELLI:  
PRESENTI SOBRE MODELLOS:

1) 25"-28" BLACK-LINE S  
2) 21"-90"  
3) BLACK-LINE 16/9  
4) 21"-110"  
5) 29"  
6) RESERVED FOR DOLBY

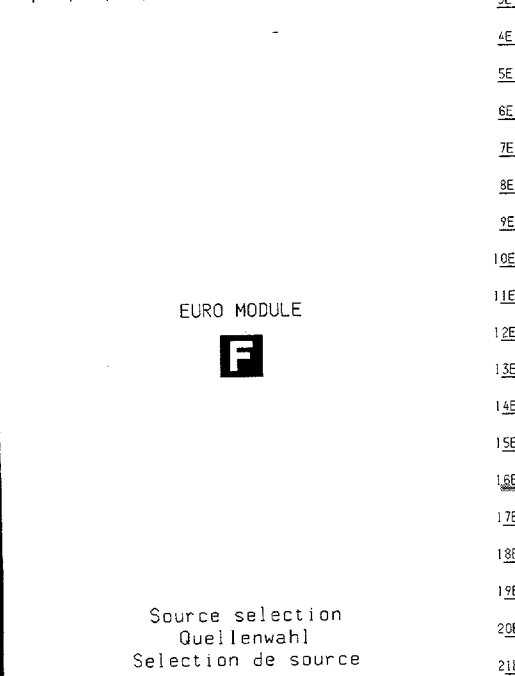
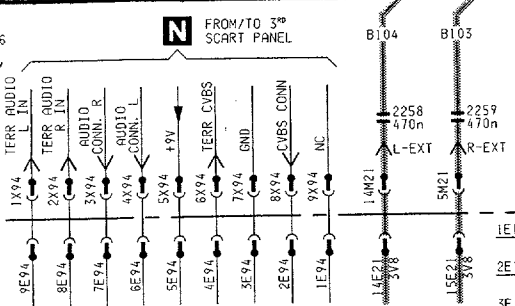
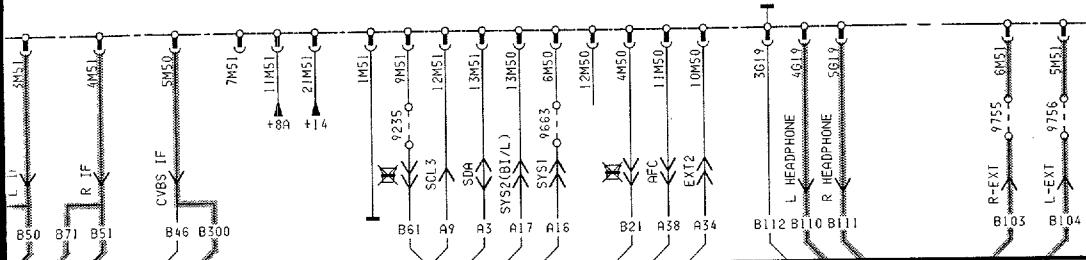
*	1)	2)	3)	4)	5)
3708	10k	22k	2k2	22k	10k
3732	10k	3k3	10k	10k	10k
3734	4k7	3k9	4k7	4k7	4k7

# B

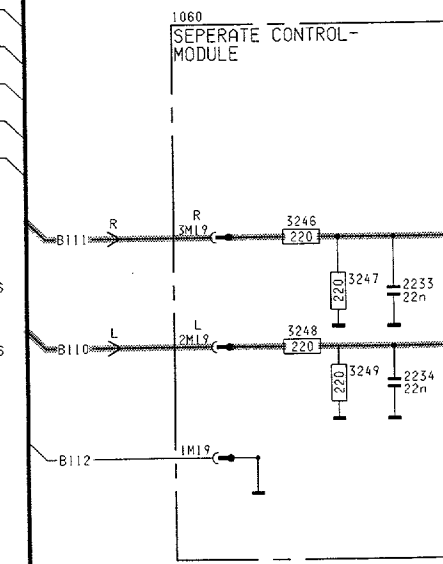
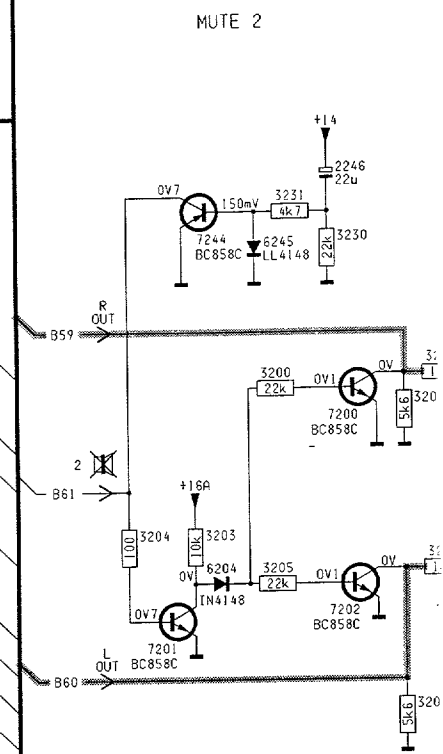
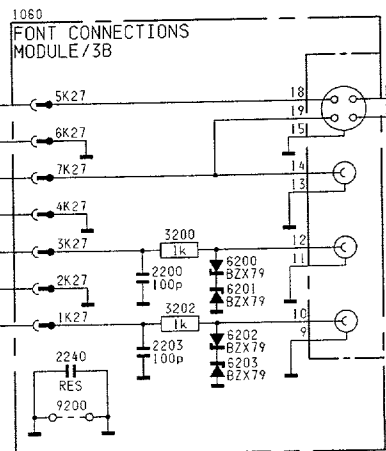


IF MODULE

J : L :  
K : M :



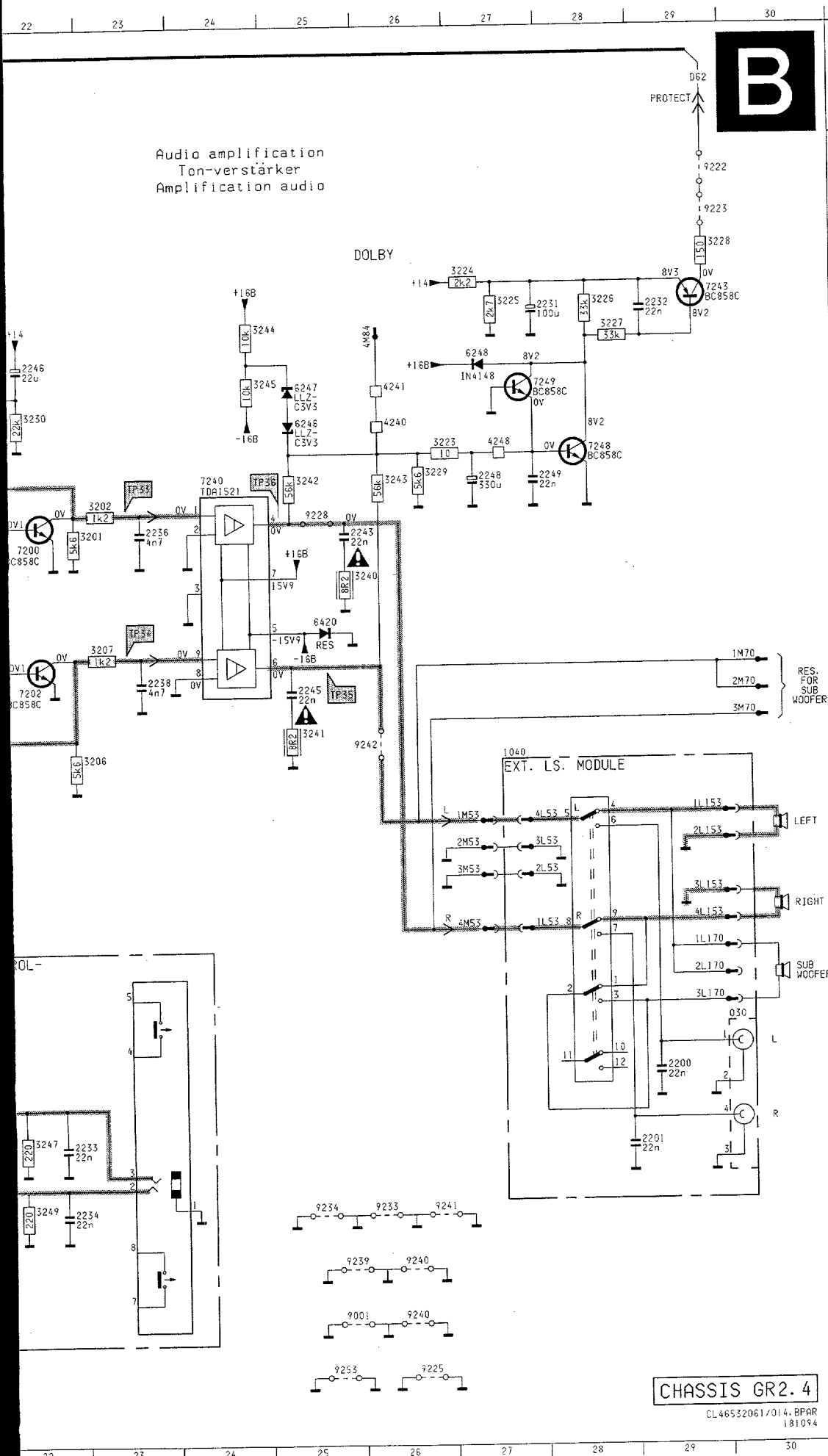
Source selection  
Quellenwahl  
Selection de source



A+C+D

Audio amplification  
Ton-verstärker  
Amplification audio

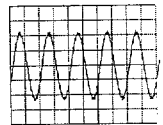
DOLBY



CHASSIS GR2.4  
CL46532061/014.BPAR  
181094

1000	C 1	3890	K 3
1001	A 8	4240	E26
1006	E10	4241	D26
1040	H27	4248	E27
1060	J20	4365	H * 3
1060	L16	4860	D 8
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	F25	7003	G 3
2237	A 5	7200	F22
2238	G23	7201	H21
2239	B 5	7202	G22
2240	A 5	7240	E24
2240	N16	7243	C29
2242	B 5	7244	E28
2243	F25	7248	D21
2245	G25	7249	D27
2246	D22	7850	J 2
2248	E27	7860	E 8
2249	E28	7861	E 9
2252	K 5	7886	M 2
2253	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	M25
3003	G 2	9240	M26
3009	F 5	9240	M26
3200	F21	9242	H26
3200	M17	9253	O25
3201	F23	9344	G16
3202	E23	9345	G17
3203	N17	9663	B15
3204	G21	9717	H 4
3205	G21	9756	B18
3206	H23	9853	B19
3207	G23	9856	I 3
3208	B 9	9860	K 3
3209	B10	9862	F 7
3220	B 4	9882	D10
3222	H 1	9883	H 4
3223	E26	9884	K 2
3224	C27		K 2
3225	C27		L 2
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 5		

\* TP31



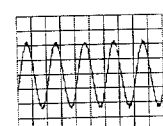
10mV/div AC  
0.5ms div

\* TP32



10mV/div AC  
0.5ms div

\* TP33



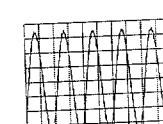
10mV/div AC  
0.5ms div

\* TP34



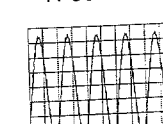
10mV/div AC  
0.5ms div

\* TP35



200mV/div AC  
0.5ms div

\* TP36

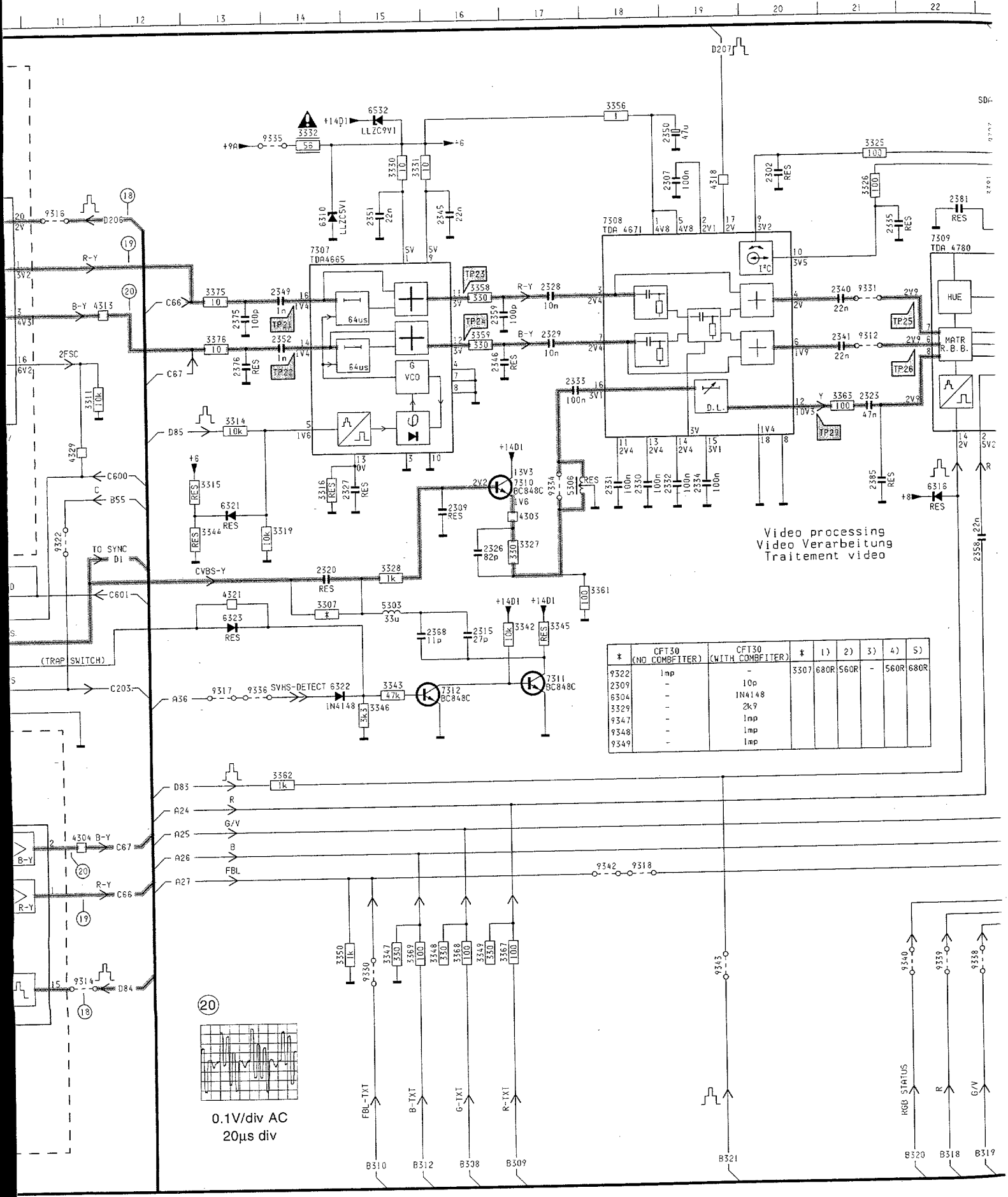


200mV/div AC  
0.5ms div

\* measured at  $\angle = 50\%$

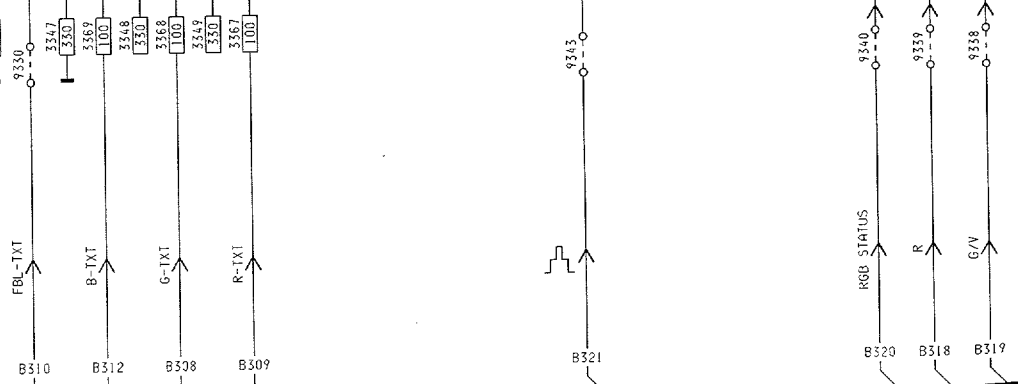
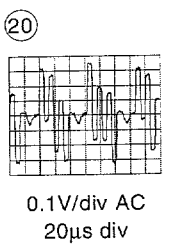


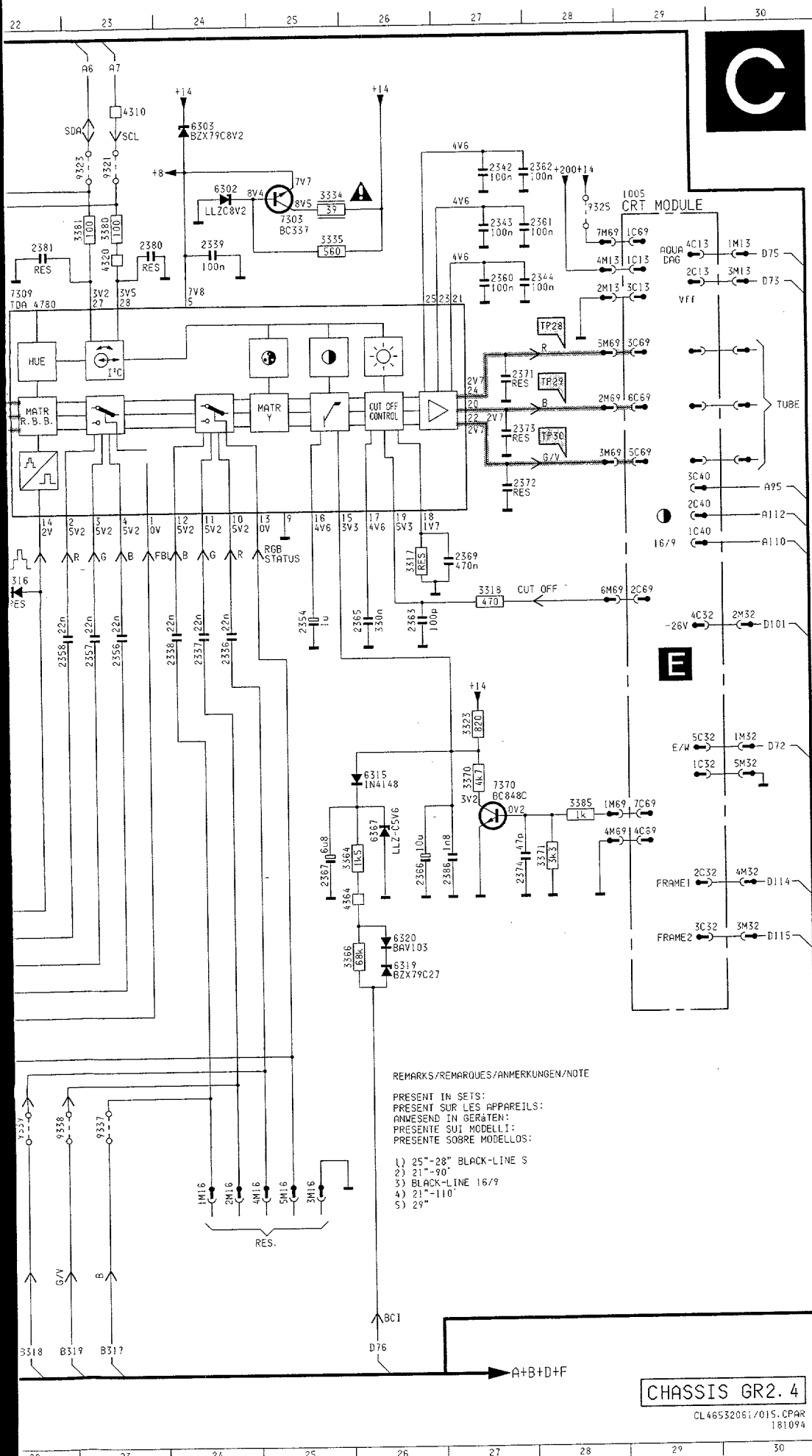




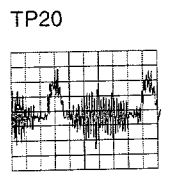
Video processing  
Video Verarbeitung  
Traitement video

* CFT30 (NO COMBITER)	CFT30 (WITH COMBITER)	*	1)	2)	3)	4)	5)
9322	imp	3307	680R	560R	-	560R	680R
2309	-						
6304	1N4148						
3329	2K7						
9347	imp						
9348	imp						
9349	imp						

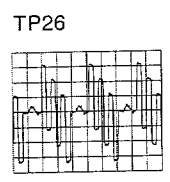




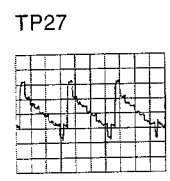
1005	B29	3319	G14	9328	L 5
1008	G 7	3320	F 5	9330	L15
1300	F 7	3321	E 3	9331	D21
1301	M 6	3322	F 6	9333	F 9
2500	C 2	3323	H27	9334	F17
2500	J 1	3324	M 5	9335	B14
2501	C 4	3325	B21	9336	I13
2501	J 3	3326	B21	9337	L23
2502	B20	3327	G17	9338	L22
2503	D 5	3328	G15	9339	L22
2503	L 4	3329	F 6	9340	L21
2504	E 3	3330	B15	9342	K18
2504	L 3	3331	B15	9343	L19
2505	D 4	3332	B14	9347	G 3
2506	B 9	3333	M 5	9348	G 3
2506	F10	3334	B25	9349	G 4
2507	B19	3335	C25		
2508	F 7	3342	H17		
2509	F16	3343	I15		
2510	B 7	3344	G13		
2511	J 9	3345	H17		
2511	D 5	3346	L15		
2512	L 4	3347	L16		
2513	M 6	3349	L16		
2514	M 7	3355	J 7		
2515	H16	3356	A18		
2516	L 5	3358	D16		
2517	E 4	3359	D16		
2519	B 7	3361	G18		
2520	G14	3362	J14		
2521	F 7	3363	E21		
2522	N 8	3364	I26		
2523	E21	3366	J26		
2525	F 8	3367	L16		
2525	M 6	3368	L16		
2526	G16	3369	L15		
2527	F15	3370	H27		
2528	D17	3371	I28		
2529	D17	3375	D13		
2530	F18	3376	D13		
2531	F18	3380	B23		
2532	F19	3381	B23		
2533	E17	3385	I28		
2535	F19	4301	D 3		
2535	C21	4302	L 3		
2536	G24	4303	F17		
2537	G24	4304	J11		
2538	G24	4305	M 9		
2539	C24	4306	I 9		
2540	D21	4307	F 8		
2541	D21	4308	F10		
2542	B27	4309	J 5		
2543	B27	4310	A23		
2544	C28	4311	E10		
2545	C16	4312	M 7		
2546	E16	4313	D11		
2548	F 8	4314	M 8		
2549	D14	4316	F 9		
2550	B19	4317	F 9		
2551	C15	4318	B19		
2552	D14	4320	C23		
2553	F 8	4321	G13		
2553	J 5	4329	F11		
2554	G25	4330	K 5		
2556	G23	4364	J26		
2557	G23	5301	D 3		
2558	G22	5301	K 3		
2559	D16	5303	H15		
2560	C27	5306	F17		
2561	B28	6300	C 3		
2562	B28	6302	B24		
2563	G26	6303	A24		
2565	G26	6304	G 4		
2566	I26	6310	C14		
2567	I25	6313	F 5		
2568	H15	6314	E 4		
2569	F27	6315	H26		
2570	L 5	6316	F22		
2571	D27	6317	E 4		
2572	E27	6319	J26		
2573	E27	6320	J26		
2574	I27	6321	F13		
2575	D13	6322	I14		
2576	E13	6323	H13		
2580	C23	6367	I26		
2581	C22	6532	A15		
2585	F21	7301	C 2		
2586	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	K 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	7320	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 5	9317	I13		
3313	G 8	9318	K18		
3313	N 7	9321	B23		
3314	E13	9322	G11		
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3316	F14	9325	B28		
3317	F26	9326	E 5		
3318	F27	9327	L 5		



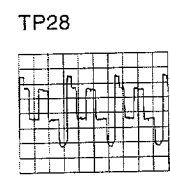
20mV/div AC  
10µs div



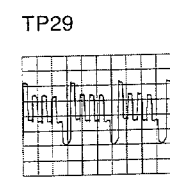
0.2V/div AC  
20µs div



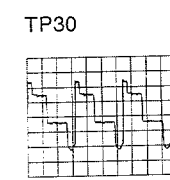
0.1V/div AC  
20µs div



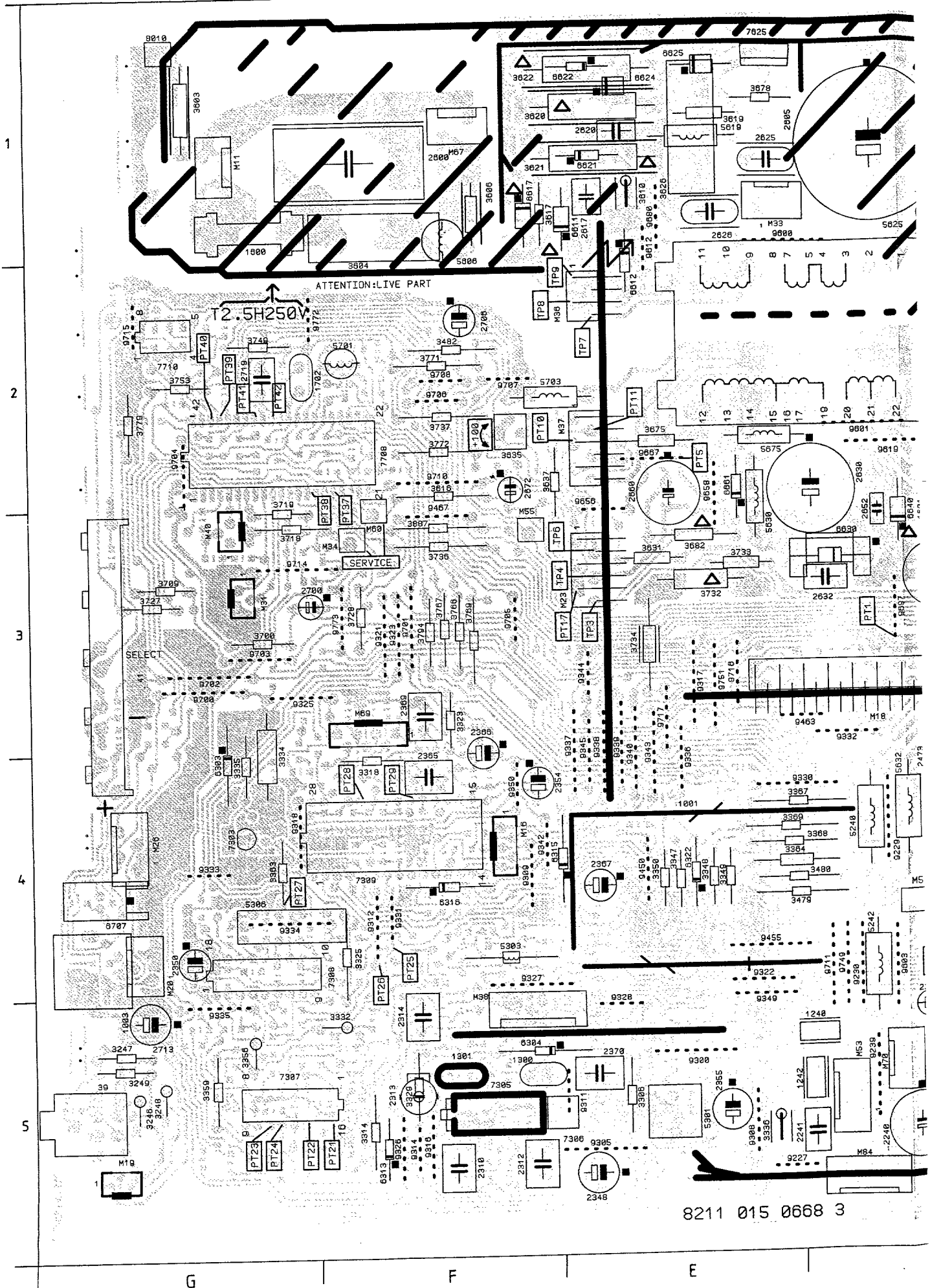
0.5V/div AC  
20µs div



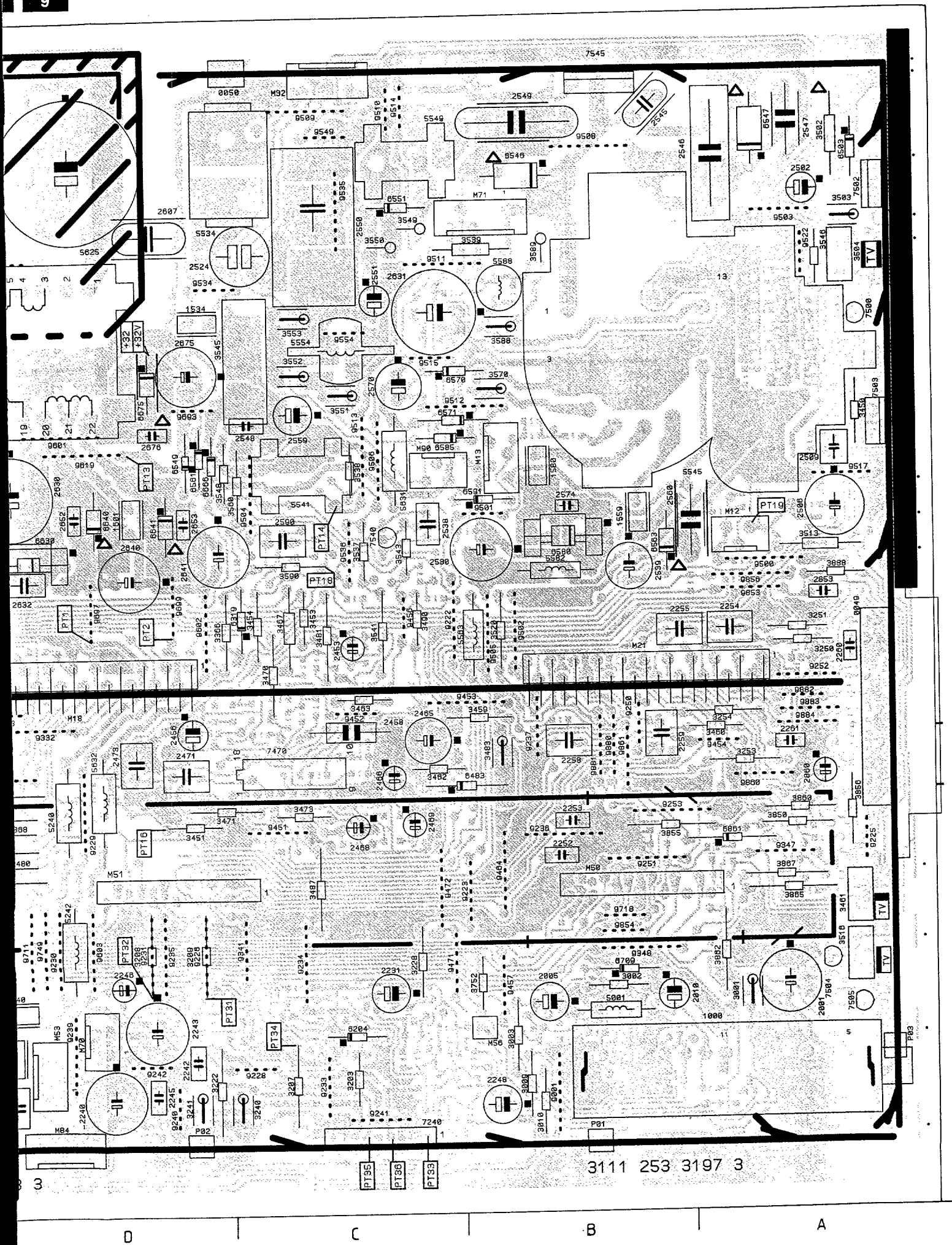
0.5V/div AC  
20µs div



0.5V/div AC  
20µs div



8211 015 0668 3



3111 253 3197 3

D

C

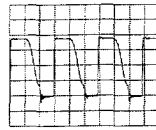
B

A

0049 A3	3323 F3	5582 B3	9345 E4
0050 C1	3325 F4	5588 B2	9347 A4
1000 A5	3329 F5	5606 F1	9348 B4
1003 G4	3332 F5	5619 E1	9349 E5
1240 D5	3334 G4	5625 D2	9350 F4
1242 D5	3335 G4	5630 E3	9450 E4
1300 F5	3336 E5	5631 C2	9451 C4
1301 F5	3347 E4	5632 D4	9452 C3
1534 D2	3348 E4	5675 E2	9453 B3
1559 B3	3349 E4	5701 F2	9454 A4
1580 B2	3350 E4	5703 E2	9455 E4
1600 G1	3356 G5	6204 C5	9456 C3
1601 D3	3359 G5	6303 G4	9457 B5
1702 G2	3363 G4	6304 F5	9463 D3
2001 A5	3364 D4	6313 F5	9464 B4
2005 B5	3366 C3	6315 E4	9467 F3
2010 B5	3367 D4	6316 F4	9471 C5
2231 C5	3368 E4	6319 C3	9472 C4
2240 D5	3369 E4	6322 E4	9500 A3
2241 D5	3450 A2	6483 B4	9501 B3
2242 D5	3451 D4	6503 A1	9502 B3
2243 D5	3453 C3	6546 B1	9503 A1
2245 D5	3454 C3	6547 A1	9504 C2
2246 D5	3459 B3	6549 D2	9505 B3
2248 B5	3460 A3	6551 C1	9506 C2
2252 B4	3461 A4	6561 D2	9508 B1
2253 B4	3462 C4	6563 B3	9509 C1
2254 A3	3463 C3	6570 B2	9510 C1
2255 B3	3467 C3	6571 B2	9511 C1
2258 B4	3470 C3	6580 B3	9512 B2
2259 B4	3471 C4	6585 C2	9513 C2
2260 A3	3473 C4	6591 B2	9514 C1
2261 A4	3479 D4	6611 E1	9515 C2
2310 F5	3480 D4	6612 E2	9517 A2
2312 F5	3481 C3	6617 F1	9522 A1
2313 F5	3482 F2	6621 E1	9534 D2
2314 F5	3483 B4	6622 E1	9535 C1
2348 E5	3487 C4	6624 E1	9536 C3
2350 G4	3490 C3	6625 E1	9549 C1
2354 F4	3502 A1	6630 D3	9554 C2
2355 E5	3503 A1	6640 D3	9600 E1
2365 F4	3504 A1	6641 D3	9601 D2
2366 F4	3513 A3	6661 E2	9602 D3
2367 E4	3516 A4	6666 D2	9603 D4
2369 F3	3520 B3	6675 D2	9612 E1
2370 E5	3537 C3	6707 G4	9619 D2
2453 C3	3538 C2	6709 B5	9656 E3
2456 D4	3539 B1	6861 A4	9658 E2
2458 C4	3541 C3	7240 C5	9667 E2
2465 C4	3543 C3	7303 G4	9680 E1
2466 C4	3545 C2	7305 F5	9693 D2
2468 C4	3546 A1	7306 F5	9697 D3
2469 C4	3548 C2	7307 F5	9699 D3
2471 D4	3549 C1	7308 G5	9700 G3
2473 D4	3550 C1	7309 F4	9701 F3
2502 A1	3551 C2	7470 C4	9702 G3
2506 A3	3552 C2	7500 A2	9703 G3
2509 A2	3553 C2	7502 A1	9704 G2
2524 C1	3560 C2	7503 A2	9705 F3
2538 C3	3570 B2	7504 A5	9706 F2
2539 B3	3588 B2	7505 A5	9707 F2
2545 B1	3589 B1	7540 C3	9708 F2
2546 A1	3590 C3	7545 B1	9710 F2
2547 A1	3603 G1	7625 E1	9711 D4
2548 C2	3604 F1	7708 G2	9714 G3
2549 B1	3606 F1	7710 G2	9715 G2
2550 C1	3610 E1	8010 G1	9716 E3
2551 C2	3616 F2	9001 B5	9717 E3
2559 C2	3617 F1	9222 C3	9718 B4
2560 A3	3619 E1	9223 B4	9749 D4
2570 C2	3620 E1	9225 A4	9751 E3
2574 B3	3621 E1	9226 D4	9772 F2
2580 B3	3622 E1	9227 E5	9773 F3
2590 C3	3626 E1	9228 C5	9853 A3
2600 F1	3631 E3	9229 D4	9854 B4
2605 D1	3635 F2	9230 D4	9856 A3
2607 D1	3637 E2	9231 D4	9860 A4
2617 E1	3675 E2	9233 C5	9861 B4
2620 E1	3678 E1	9234 C5	9860 B4
2625 E1	3682 E3	9235 D4	9861 B4
2626 E1	3700 G3	9236 B4	9882 A3
2630 D3	3709 G3	9237 B3	9883 A3
2631 C2	3718 G3	9239 D5	9884 A3
2632 D3	3719 G3	9240 D5	M11 G1
2640 D3	3727 G3	9241 C5	M12 A3
2641 D3	3728 F3	9242 D5	M13 B2
2652 D3	3732 E3	9250 B3	M16 F4
2653 D3	3733 E3	9251 A4	M18 D3
2660 E3	3734 E3	9252 A3	M19 G5
2672 F2	3736 F3	9253 B4	M20 G4
2675 D2	3737 F2	9300 E5	M21 B3
2676 D2	3749 G2	9305 E5	M23 E3
2700 F3	3752 B5	9308 E5	M26 G4
2706 F2	3753 G2	9309 F4	M31 G3
2713 G5	3766 F3	9311 E5	M32 C1
2719 G2	3767 F3	9312 F4	M33 E1
2853 A3	3769 F3	9314 F5	M34 F3
2860 A4	3771 F2	9316 F5	M36 E2
3001 A5	3772 F2	9317 E3	M37 E2
3002 B5	3779 G2	9318 G4	M38 E5
3003 B5	3794 F3	9321 F3	M40 G3
3009 B5	3850 A4	9322 E4	M50 B4
3010 B5	3855 B4	9323 F3	M51 D4
3203 C5	3856 A4	9325 G3	M53 D5
3207 C5	3860 A4	9326 F3	M55 F3
3208 D4	3862 A4	9327 F4	M56 B5
3209 D4	3865 A4	9328 E5	M60 F3
3222 D5	3867 A4	9330 D4	M67 F1
3228 C4	3887 F3	9331 F4	M69 F3
3240 C5	3888 A3	9332 D3	M70 D5
3241 D5	5001 B5	9333 G4	M71 B1
3246 G5	5240 D4	9334 G4	M84 D5
3247 G5	5242 D4	9335 G5	M90 C2
3248 G5	5301 E5	9336 E4	P01 B5
3249 G5	5303 F4	9337 E4	P02 D5
3250 A3	5306 G4	9338 E4	P03 A5
3251 A3	5534 D1	9339 E4	
3253 A4	5541 C2	9340 E4	
3254 A3	5545 B2	9341 C4	
3306 E5	5549 C1	9342 F4	
3314 F5	5554 C2	9343 E4	
3318 F4	5563 B3	9344 E3	

TP1 = DC 15V9  
TP2 = DC -15V9

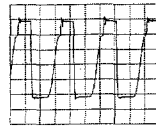
TP3



20V/div AC  
5µs div

TP4 = DC 9V7

TP5

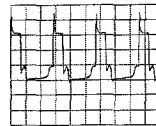


5V/div AC  
5µs div

TP6 = DC 4V8

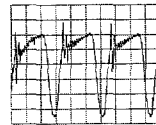
TP7 = DC 298V

TP8



2V/div AC  
5µs div

TP9



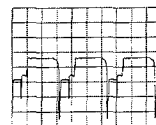
0.2V/div AC  
5µs div

TP10 = DC 2V4

TP11 = DC 0V

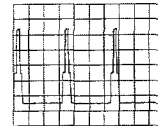
TP12 = DC 2V7

TP14



2V/div AC  
20µs div

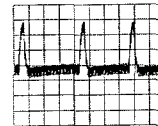
TP16



2V/div AC  
20µs div

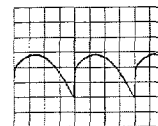
TP17 = DC 0V

TP18



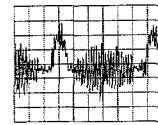
2V/div AC  
5ms div

TP19



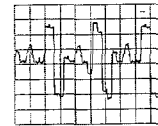
1V/div AC  
5ms div

TP20



20mV/div AC  
10µs div

TP21



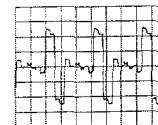
0.1V/div AC  
20µs div

TP22



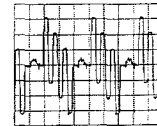
0.2V/div AC  
20µs div

TP23



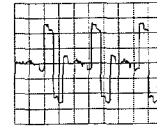
0.2V/div AC  
20µs div

TP24



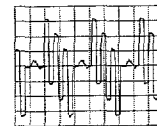
0.2V/div AC  
20µs div

TP25



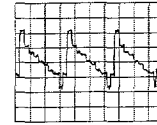
0.2V/div AC  
20µs div

TP26



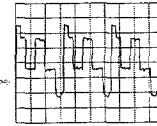
0.2V/div AC  
20µs div

TP27



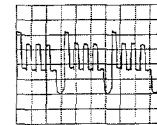
0.1V/div AC  
20µs div

TP28



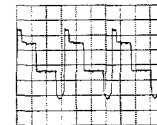
0.5V/div AC  
20µs div

TP29



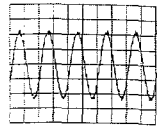
0.5V/div AC  
20µs div

TP30



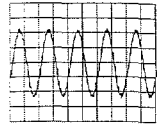
0.5V/div AC  
20µs div

TP31



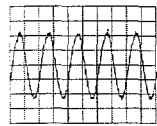
10mV/div AC  
0.5ms div

TP32



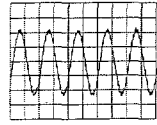
10mV/div AC  
0.5ms div

TP33



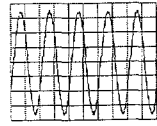
10mV/div AC  
0.5ms div

TP34



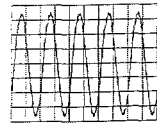
10mV/div AC  
0.5ms div

TP35



200mV/div AC  
0.5ms div

TP36

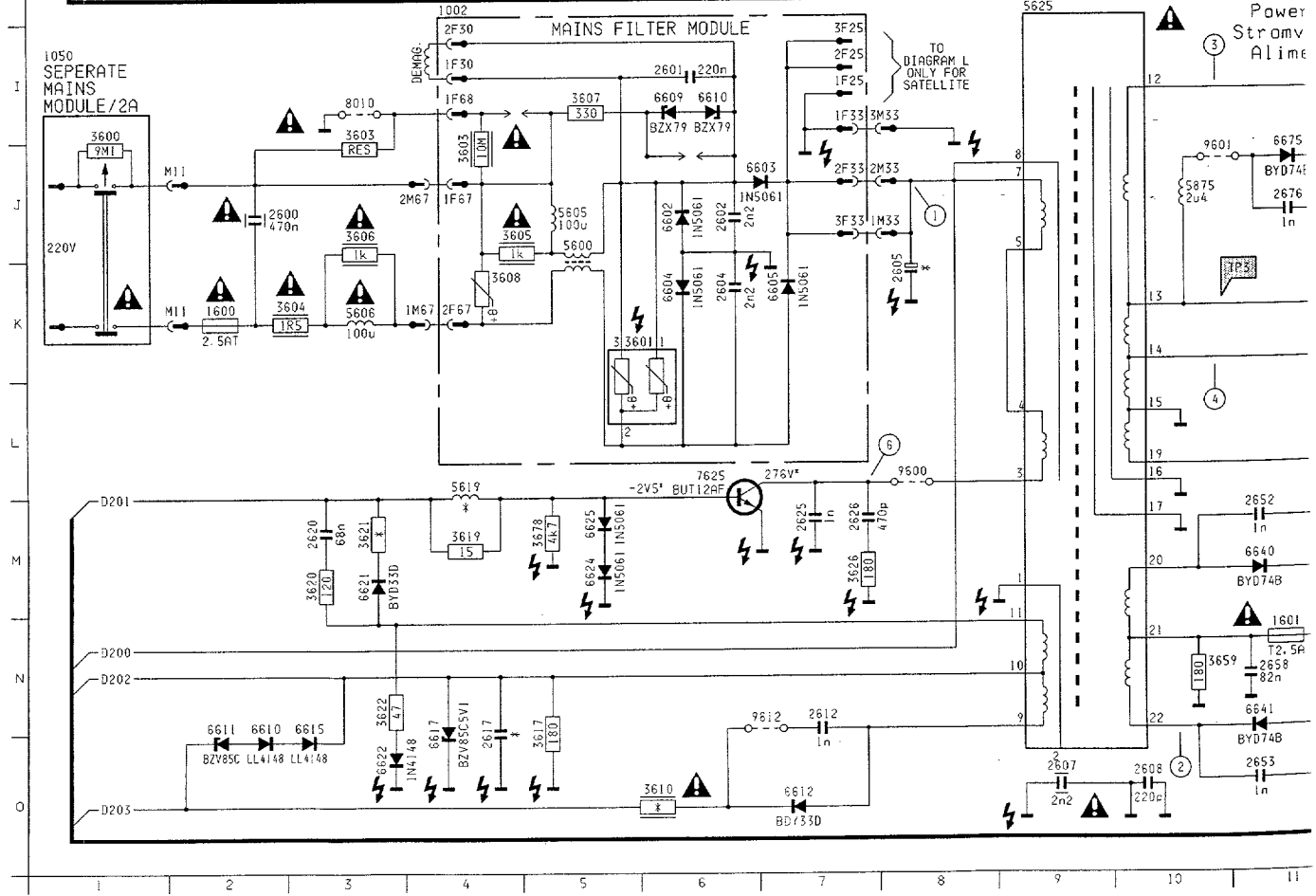
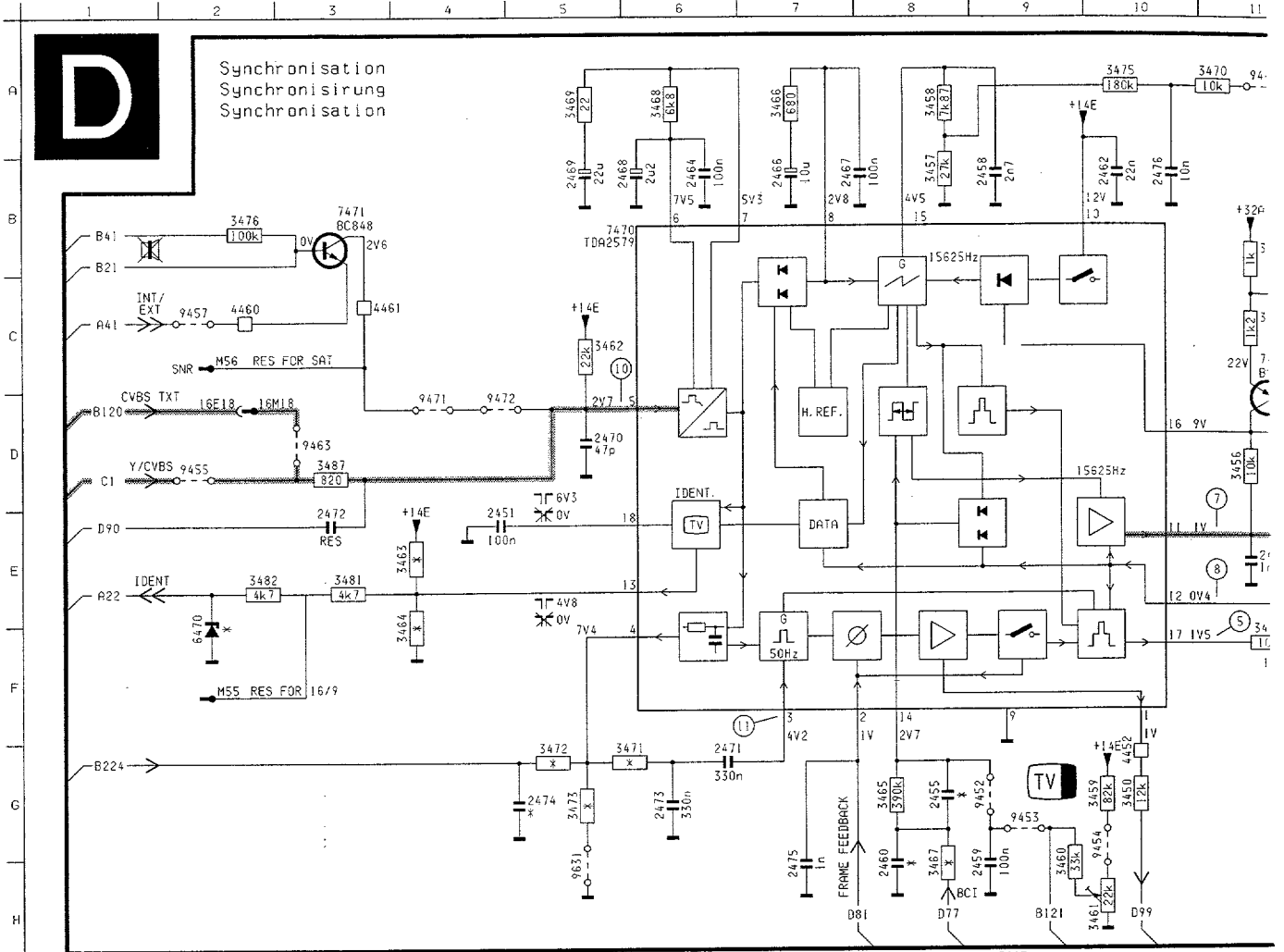


200mV/div AC  
0.5ms div

# Power supply/Stromversorgung/Alimentation

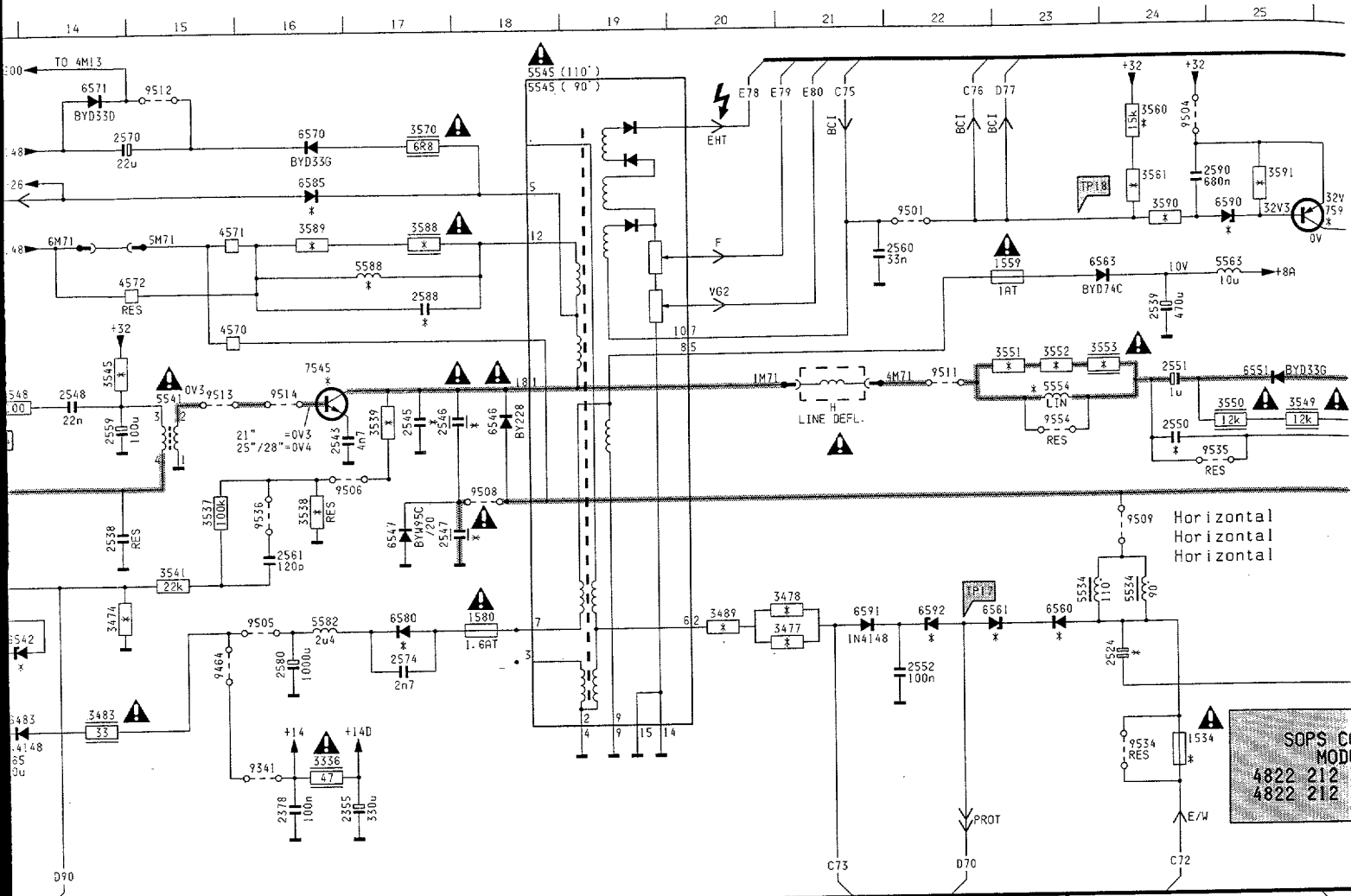
# D

Synchronisation  
Synchronisierung  
Synchronisation

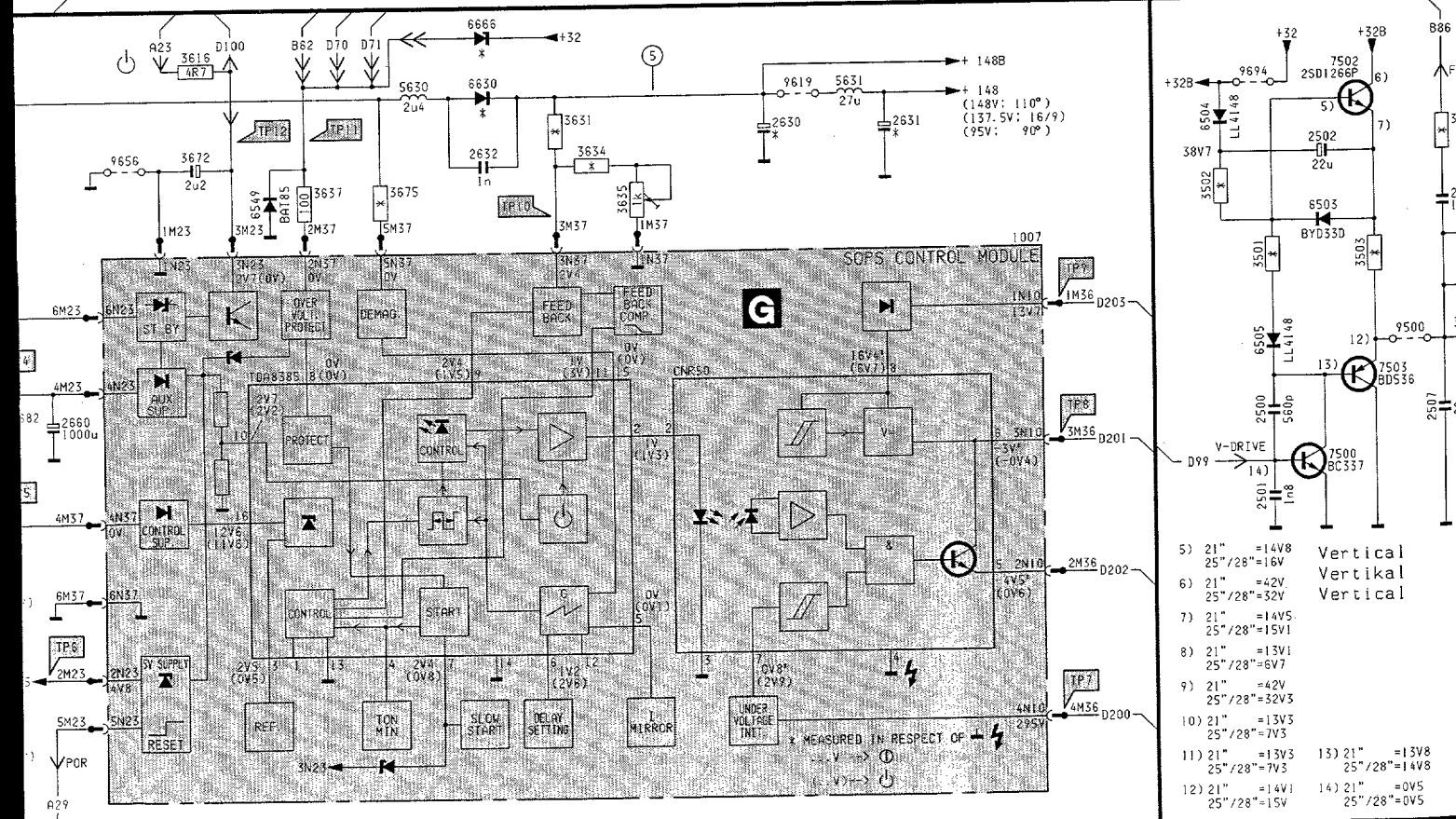








SOPS CONTROL MODULE  
4822 212  
4822 212



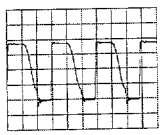
- Vertical  
Vertical  
Vertical
- 5) 21" = 14V8  
25"/28" = 16V
  - 6) 21" = 42V  
25"/28" = 32V
  - 7) 21" = 14V5  
25"/28" = 15V1
  - 8) 21" = 13V1  
25"/28" = 6V7
  - 9) 21" = 42V  
25"/28" = 32V3
  - 10) 21" = 13V3  
25"/28" = 7V3
  - 11) 21" = 13V3  
25"/28" = 7V3
  - 12) 21" = 14V1  
25"/28" =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





TP1 = DC 15V9  
 TP2 = DC -15V9

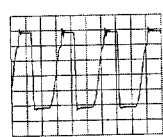
TP3



20V/div AC  
 5µs div

TP4 = DC 9V7

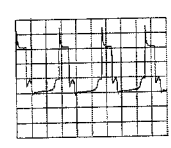
TP5



5V/div AC  
 5µs div

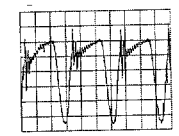
TP6 = DC 4V8  
 TP7 = DC 298V

TP8



2V/div AC  
 5µs div

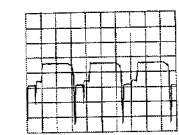
TP9



0.2V/div AC  
 5µs div

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

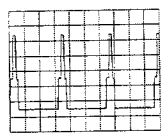
TP14



2V/div AC  
 20µs div

TP15 = DC 13V4

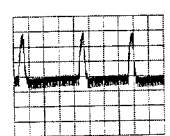
TP16



2V/div AC  
 20µs div

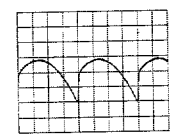
TP17 = DC 0V

TP18



2V/div AC  
 5ms div

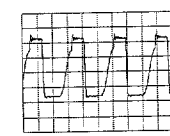
TP19



1V/div AC  
 5ms div

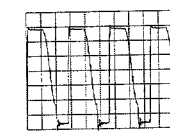
① = DC 298V

②



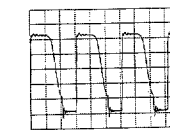
10V/div AC  
 5µs div

③



50V/div AC  
 5µs div

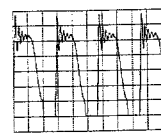
④



5V/div AC  
 5µs div

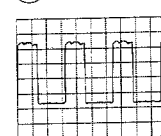
⑤a = DC 144V

⑥



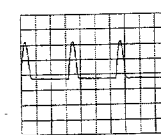
100V/div AC  
 5µs div

⑦



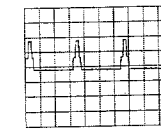
0.5V/div AC  
 20µs div

⑧



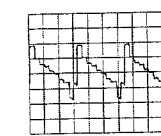
1V/div AC  
 20µs div

⑨

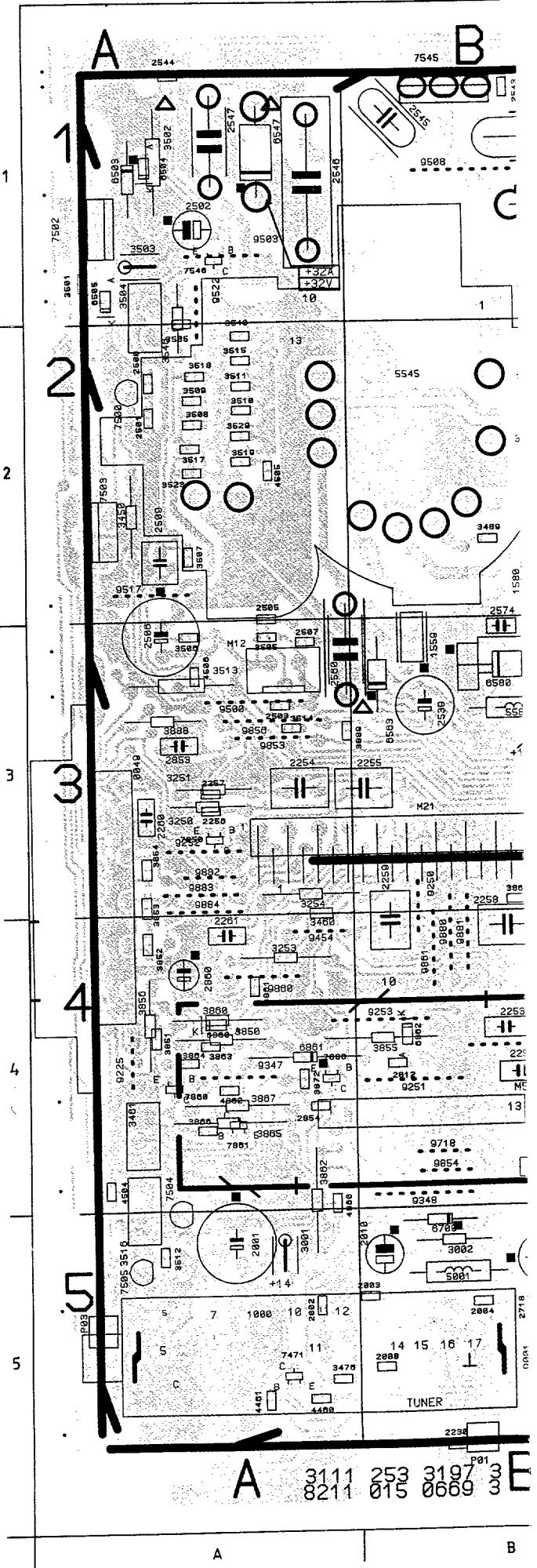


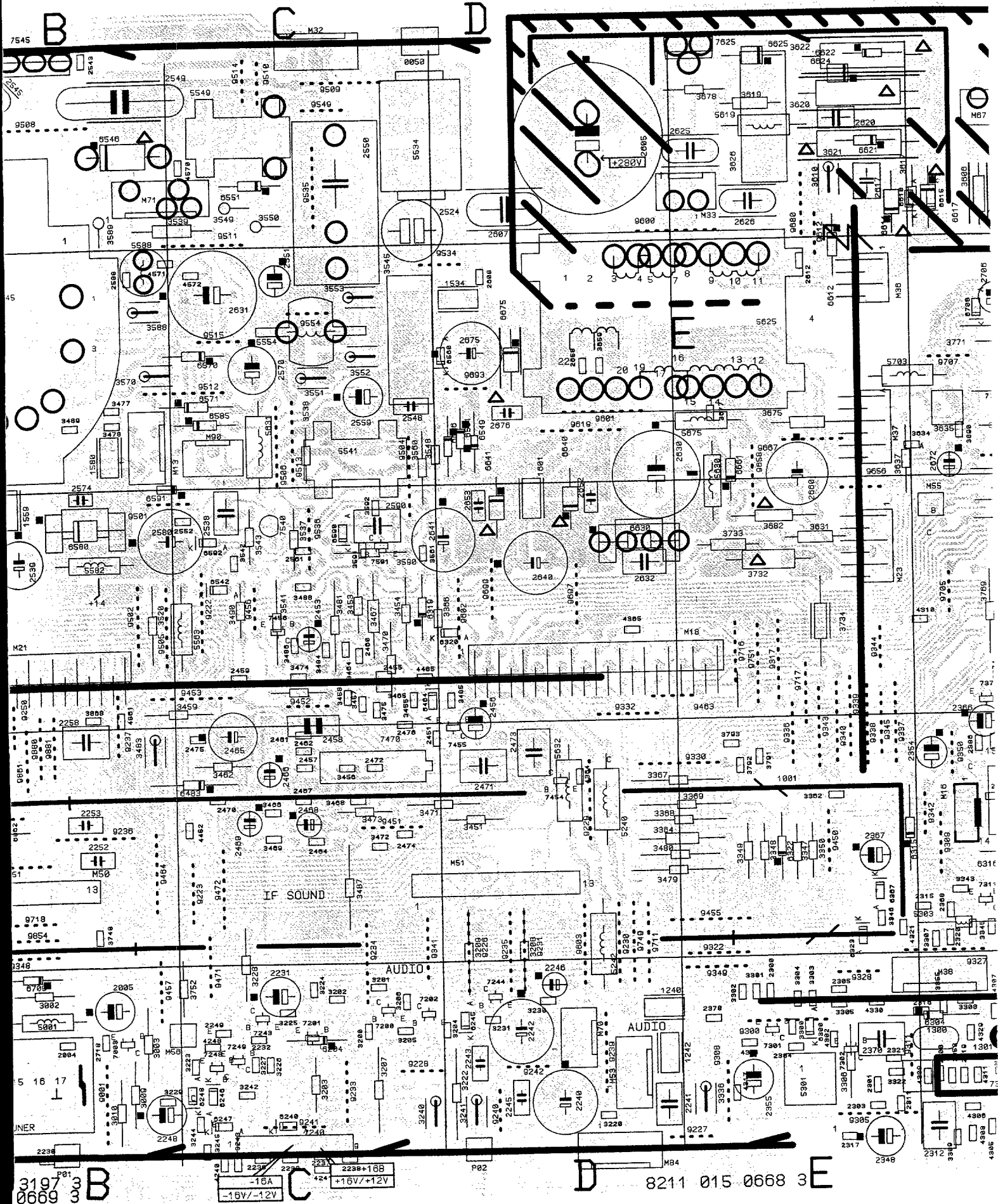
5V/div AC  
 20µs div

⑩



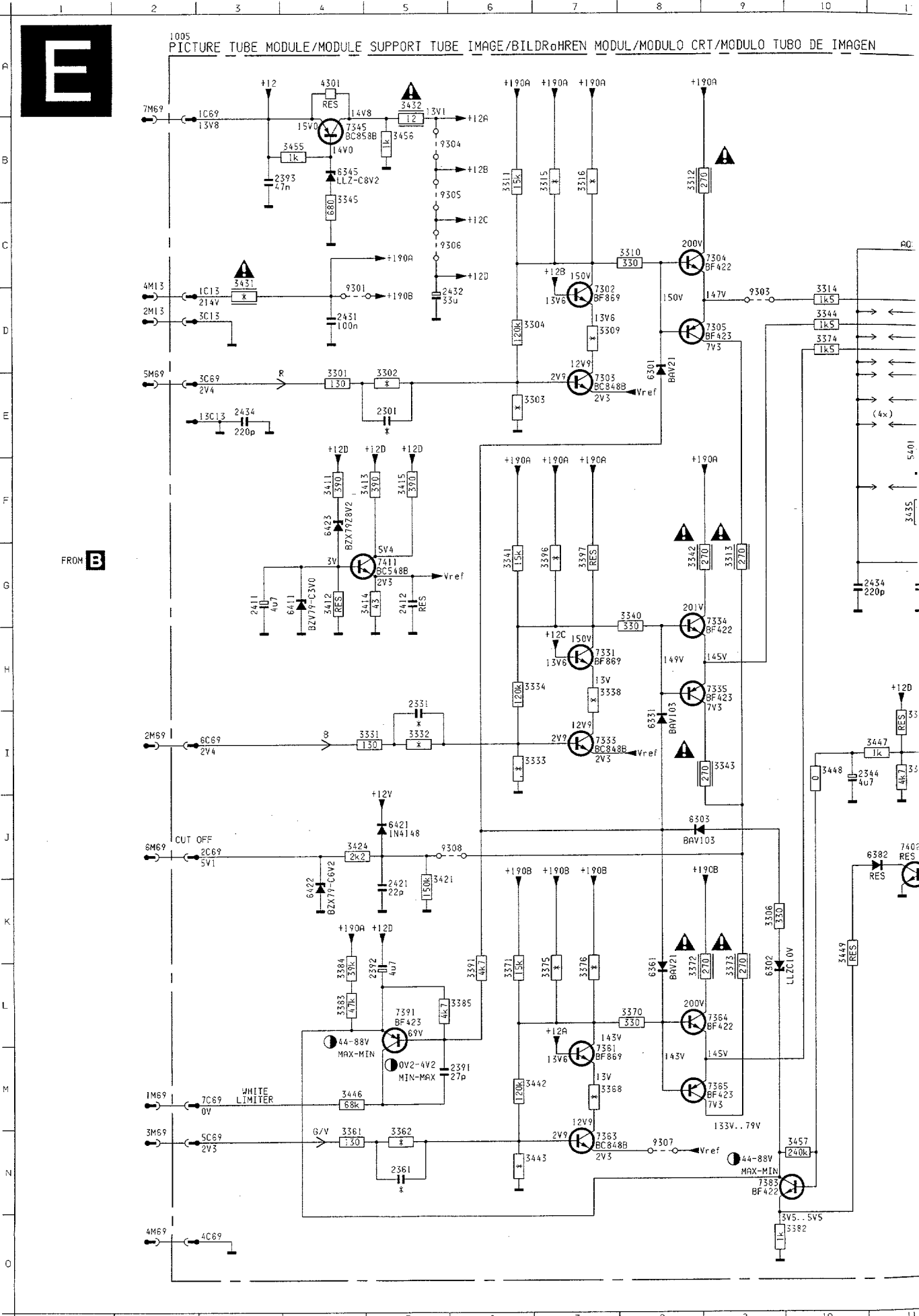
0.5V/div AC  
 20µs div







# Picture tube panel/Bildröhren platte/Platine TRC





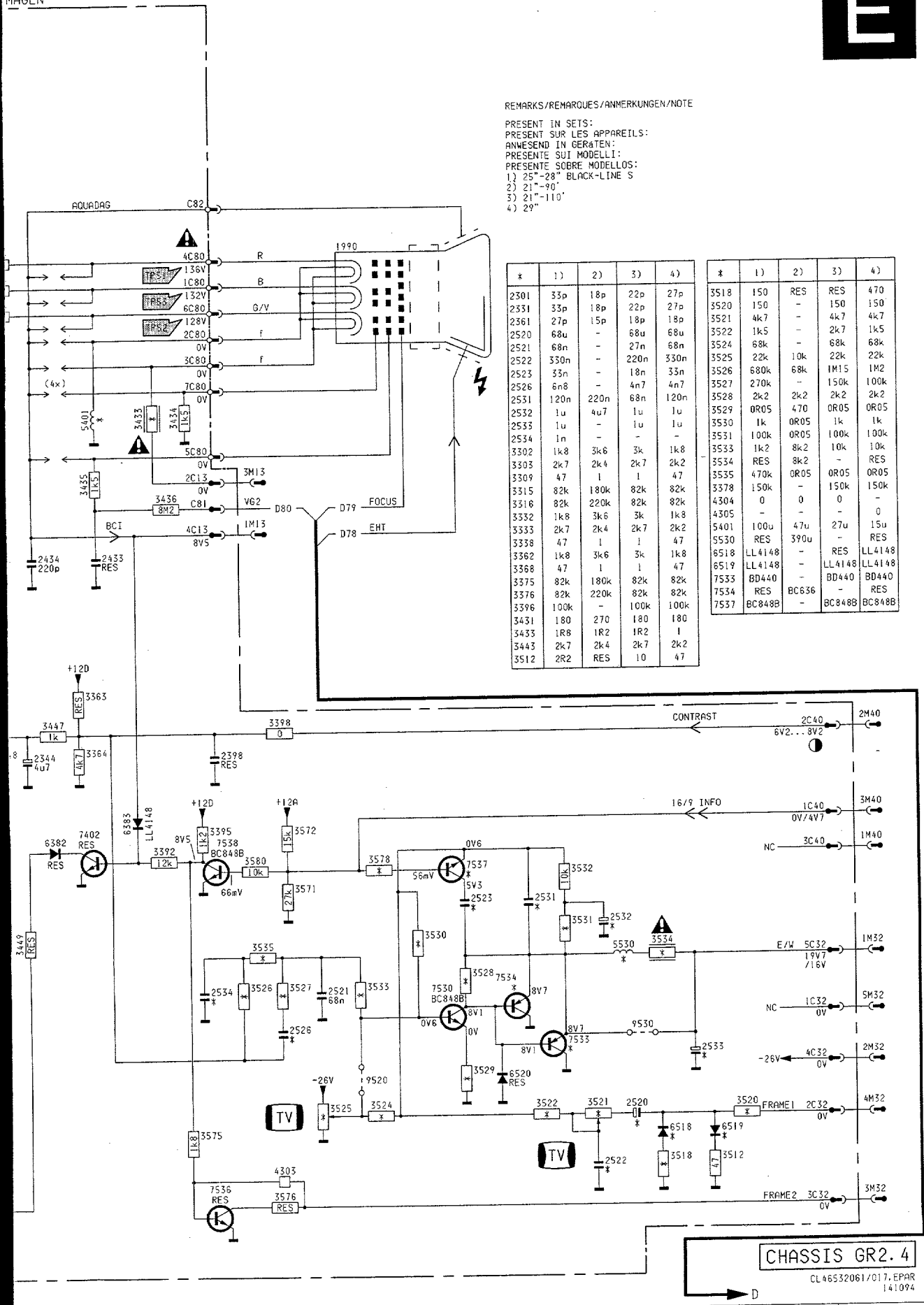
REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:  
 PRESENT SUR LES APPAREILS:  
 ANNESEND IN GERÄTEN:  
 PRESENTE SUOI MODELLI:  
 PRESENTE SOBRE MODELOS:  
 1) 25"-28" BLACK-LINE S  
 2) 21"-90"  
 3) 21"-110"  
 4) 29"

*	1)	2)	3)	4)	*	1)	2)	3)	4)
2301	33p	18p	22p	27p	3518	150	RES	RES	470
2331	33p	18p	22p	27p	3520	150	-	150	150
2361	27p	15p	18p	18p	3521	4k7	-	4k7	4k7
2520	68u	-	68u	68u	3522	1k5	-	2k7	1k5
2521	68n	-	27n	68n	3524	22k	-	68k	68k
2522	33n	-	220n	33n	3525	28k	10k	22k	22k
2523	33n	-	18n	33n	3526	680k	68k	1M15	1M2
2526	6n8	-	4n7	4n7	3527	270k	-	150k	100k
2531	120n	220n	68n	120n	3528	2k2	2k2	2k2	2k2
2532	1u	4u7	1u	1u	3529	0R05	470	0R05	0R05
2533	1u	-	1u	1u	3530	1k	0R05	1k	1k
2534	1n	-	-	-	3531	100k	0R05	100k	100k
3302	1k8	3k6	3k	1k8	3533	1k2	8k2	10k	10k
3303	2k7	2k4	2k7	2k2	3534	RES	8k2	-	RES
3309	47	1	1	47	3535	470k	0R05	0R05	0R05
3315	82k	180k	82k	82k	3378	150k	-	150k	150k
3316	82k	220k	82k	82k	4304	0	0	0	-
3332	1k8	3k6	3k	1k8	4305	-	-	-	0
3333	2k7	2k4	2k7	2k2	5401	100u	47u	27u	15u
3338	47	1	1	47	5530	RES	390u	-	RES
3362	1k8	3k6	3k	1k8	6518	LL4148	-	RES	LL4148
3368	47	1	1	47	6519	LL4148	-	LL4148	LL4148
3375	82k	180k	82k	82k	7533	BD440	-	BD440	BD440
3376	82k	220k	82k	82k	7534	RES	BC636	-	RES
3596	100k	-	100k	100k	7537	BC848B	-	BC848B	BC848B
3431	180	270	180	180					
3433	1R8	1R2	1R2	1					
3443	2k7	2k4	2k7	2k2					
3512	2R2	RES	10	47					

- A 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 M17 7302 D 7
- 2523 K15 7303 E 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 7383 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 K12
- 3334 H 6 7538 K15
- 3338 H 7 7539 D 4
- 3340 G 8 9301 O 3
- 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
- 3364 I11
- 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
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- 3534 L18
- 3535 L13
- 3571 K13
- 3572 J13
- 3575 N12
- 3576 N13
- 3578 K14

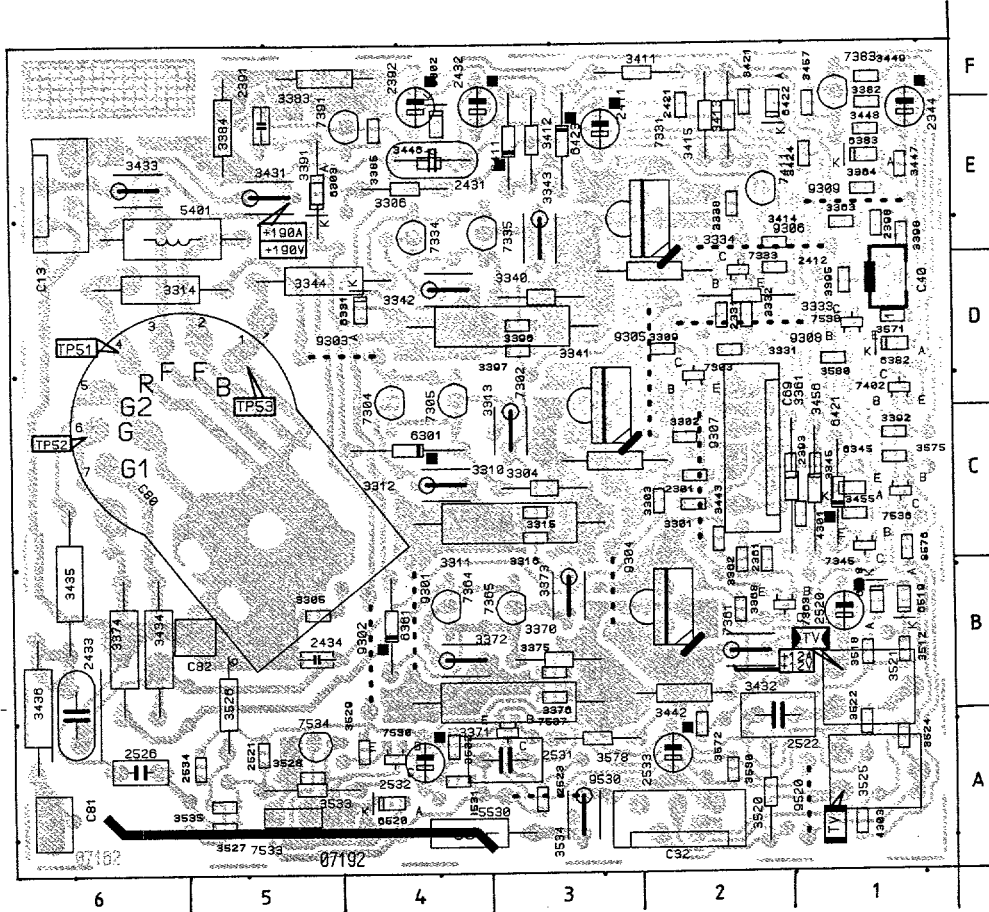
MAGEN



CHASSIS GR2.4  
 CL46532061/017, EPAR  
 141094

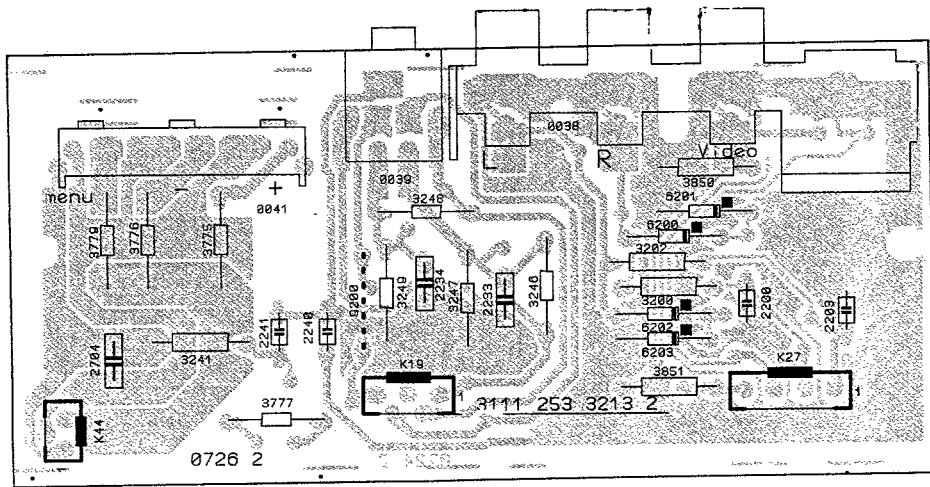


### 1005 PICTURE TUBE MODULE

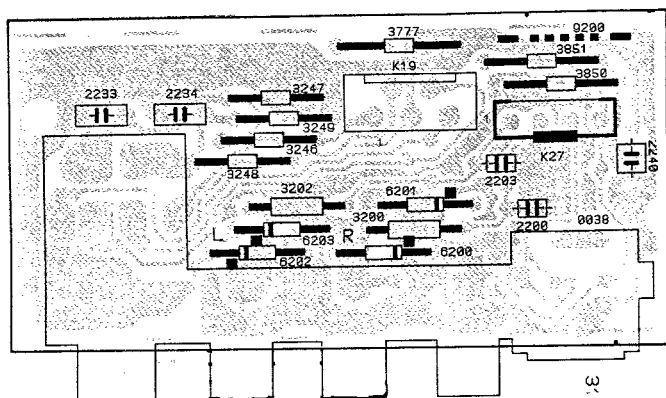


2301	C2	3372	B4	3575	C1	C13	E6
2331	D2	3373	B3	3576	C1	C32	A2
2344	E1	3374	B6	3578	A3	C40	D1
2361	C2	3375	B3	3580	D1	C69	C2
2391	E5	3376	B3	4301	C1	C80	C5
2392	E4	3382	E1	4303	A1	C81	A6
2393	C1	3383	F5	5401	E6	C82	B5
2398	E1	3384	E5	6301	C4		
2411	E3	3385	E4	6302	E4		
2412	D2	3391	E5	6303	E5		
2421	E2	3392	C1	6331	D4		
2431	E4	3395	D1	6345	C1		
2432	E4	3396	D3	6361	B4		
2433	B6	3397	D3	6382	D1		
2434	B5	3398	E1	6383	E1		
2520	B1	3411	F2	6411	E3		
2521	A5	3412	E3	6421	C1		
2522	A2	3413	E2	6422	E2		
2523	A3	3414	E2	6423	E3		
2526	A6	3415	E2	6518	B1		
2531	A3	3421	F2	6519	B1		
2532	A4	3424	E1	6520	A4		
2533	A2	3431	E5	7302	D3		
2534	A5	3432	B2	7303	D2		
3301	C2	3433	E6	7304	D4		
3302	C2	3434	B6	7305	D4		
3303	C2	3435	B6	7331	E2		
3304	C3	3436	B6	7332	D2		
3305	B5	3442	B2	7334	E4		
3306	E4	3443	C2	7335	E3		
3309	D2	3446	E4	7345	C1		
3310	C3	3447	E1	7361	B2		
3311	C3	3448	E1	7363	B2		
3312	C4	3449	F1	7364	B4		
3313	C3	3455	C1	7365	B3		
3314	D6	3456	C1	7383	F1		
3315	C3	3457	E1	7391	E4		
3316	C3	3512	B1	7402	D1		
3331	D2	3518	B1	7411	E2		
3332	D2	3520	A2	7530	A4		
3333	D2	3521	B1	7533	A5		
3334	D2	3522	A1	7534	A5		
3338	E2	3524	A1	7536	C1		
3340	D3	3525	A1	7537	A3		
3341	D3	3526	B5	7538	D1		
3342	D4	3527	A5	9301	B4		
3343	E3	3528	A5	9302	B4		
3344	D5	3529	A4	9303	D4		
3345	C1	3530	A2	9304	B3		
3361	C1	3531	A4	9305	D2		
3362	C2	3532	A4	9306	E2		
3363	E1	3533	A5	9307	C2		
3364	E1	3534	A3	9308	D2		
3368	B2	3535	A5	9309	E1		
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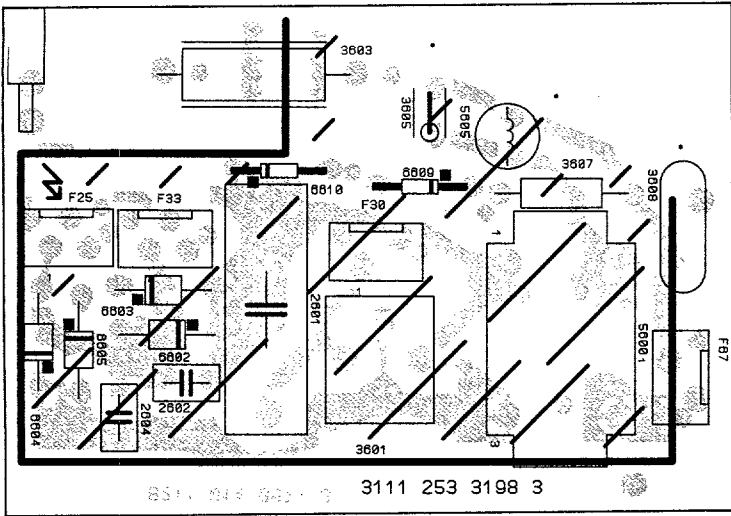
### 1060 SEPARATE CONTROL MODULE



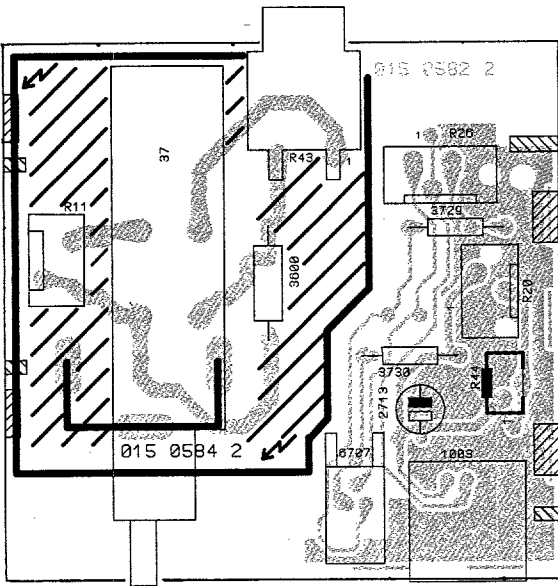
### 1060 SEPARATE CONTROL MODULE 29"



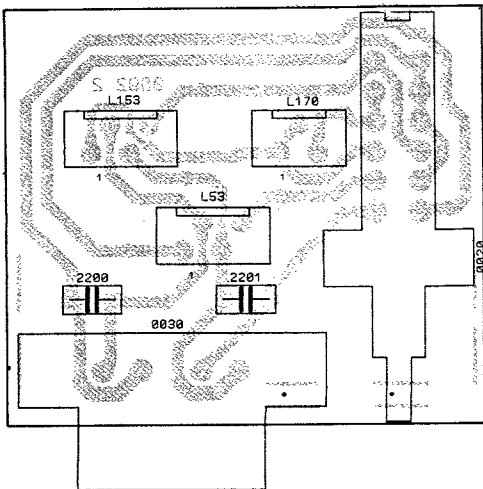
### 1002 MAINS FILTER MODULE



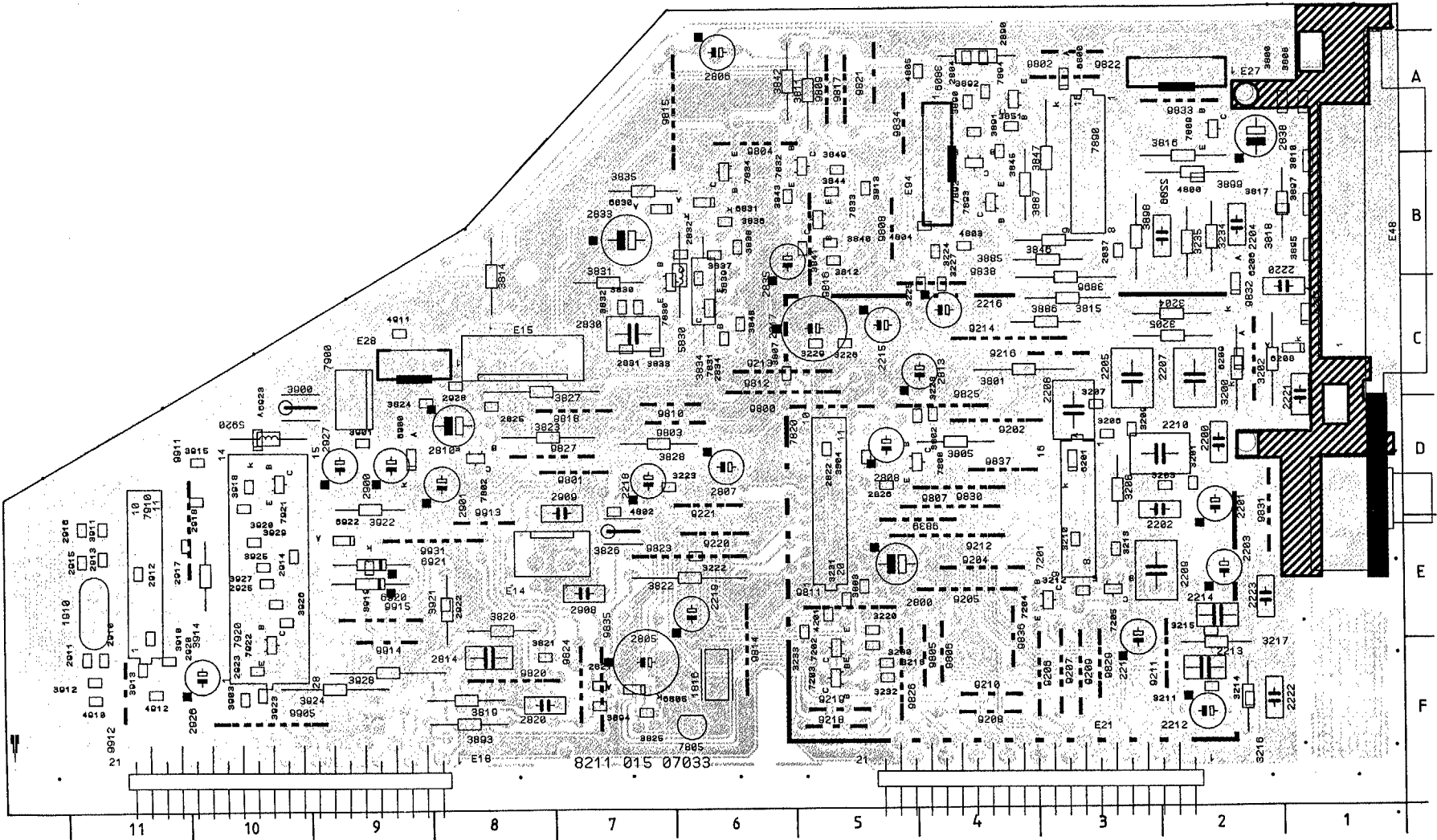
### 1050 SEPARATE MAINS MODULE



### 1040 EXTERNAL LOUDSPEAKER MODULE



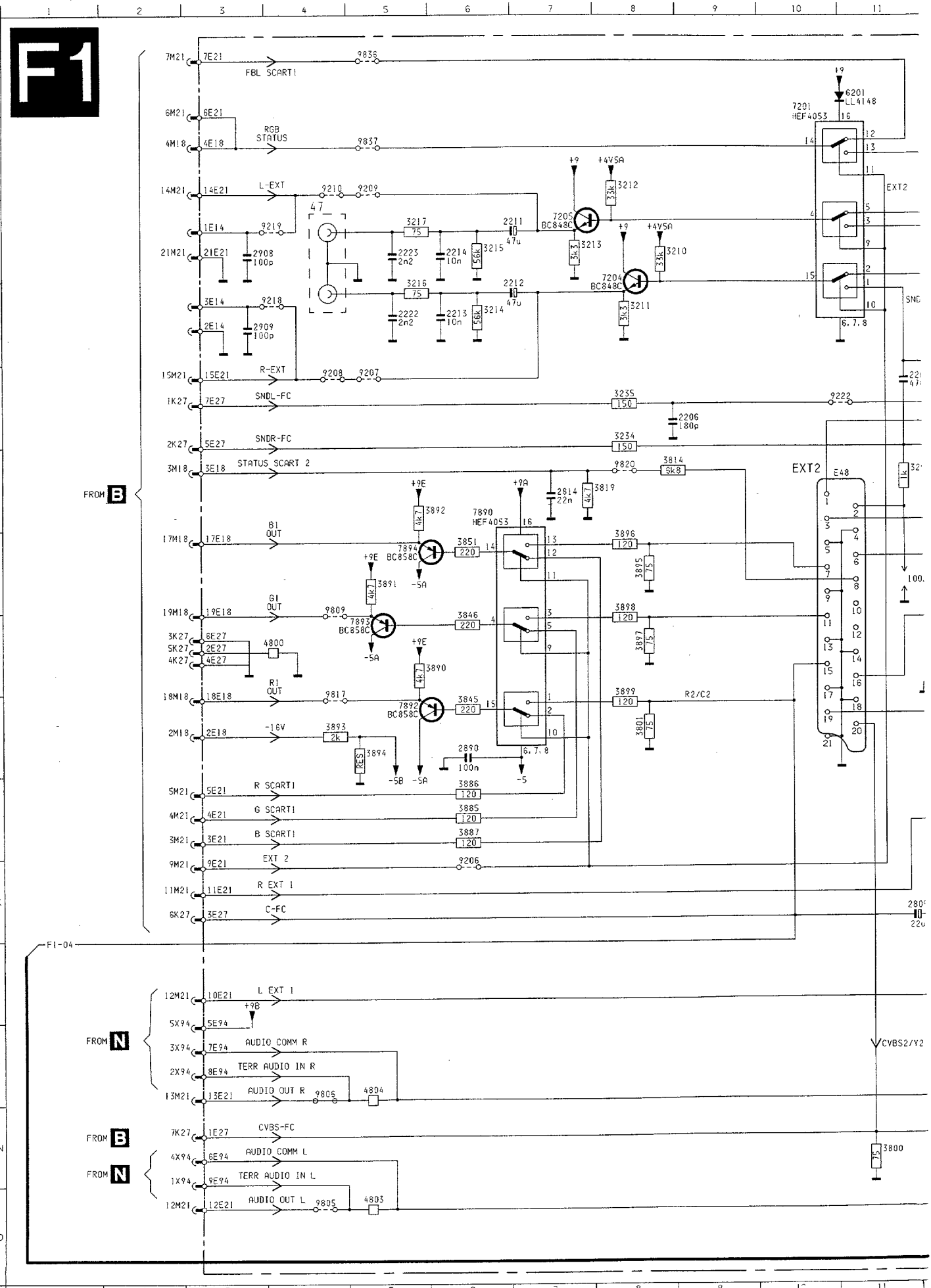




1003 TELETEXT MODULE 4/3

1000 C1	2209 E2	2800 E5	2832 C6	2914 E9	3203 D2	3218 F5	3235 B2	3815 C3	3831 C7	3846 B3	3897 B1	3921 E8	4910 F11	6920 E9	7831 C6	9205 E4	9800 D5	9816 B5	9833 A2	E15 C8
1001 C1	2210 D2	2804 A4	2833 B7	2915 E11	3204 C2	3220 F5	3800 A1	3816 B2	3832 C7	3847 B3	3898 B3	3922 E9	4911 C9	6921 E9	7832 B5	9206 F3	9801 D7	9817 A5	9834 A4	E18 G10
1002 C1	2211 F3	2805 F7	2834 C6	2916 E11	3205 C2	3222 E6	3801 C3	3817 B1	3833 C6	3848 C6	3899 B2	3923 F10	4912 F11	6922 E9	7833 B5	9207 F3	9802 A3	9818 D7	9835 F4	E21 G8
1003 C1	2212 F2	2807 D6	2835 C5	2917 E10	3206 D3	3223 D6	3802 D4	3818 B1	3834 C6	3849 B5	3900 D9	3924 F9	4913 C6	6923 D10	7834 B6	9208 F4	9803 D6	9819 A5	9836 F4	E27 A2
1816 F6	2213 F2	2808 D5	2837 C3	2918 E10	3207 D3	3224 C4	3803 E5	3819 F8	3835 B7	3851 B4	3901 D9	3925 E10	5920 D10	7201 E3	7890 B3	9209 F3	9804 B6	9821 A5	9837 D4	E28 C8
1910 E11	2214 F2	2810 D8	2838 B2	2920 F11	3208 E3	3225 C4	3804 D5	3820 F8	3836 B6	3855 C3	3903 F10	3926 F10	6201 D3	7202 F5	7892 B4	9210 F4	9805 F4	9822 A3	9838 C4	E48 C1
2200 D2	2215 C5	2813 D4	2890 A4	2922 E8	3209 D3	3226 C5	3805 D4	3821 F7	3837 C6	3886 C3	3910 F11	3927 E10	6202 C2	7203 F5	7893 B4	9211 F2	9806 F4	9823 E6	9839 E4	E48 B4
2201 E2	2216 C4	2814 F8	2900 D9	2923 F10	3210 E3	3227 C4	3807 D5	3822 E6	3838 B6	3887 B3	3911 E11	3928 F9	6207 C1	7204 E3	7894 A3	9212 D5	9807 E4	9824 F7	9905 F10	
2202 E2	2217 C5	2820 F7	2901 D8	2925 E10	3211 F2	3228 D4	3808 A1	3823 D7	3839 C6	3890 A4	3912 F11	3929 E10	6208 C1	7205 E3	7900 D9	9213 D5	9808 B5	9825 F4	9911 F10	
2203 E2	2218 D7	2821 F7	2908 E7	2926 F10	3212 E3	3229 C5	3809 A4	3824 D8	3840 B5	3891 B4	3913 F11	4201 F5	6209 C2	7800 D4	7910 E11	9214 C4	9809 A5	9826 F4	9912 F11	
2204 B2	2219 F6	2822 D5	2909 E7	2927 D9	3213 E3	3230 F5	3810 B1	3825 F7	3841 C5	3892 A4	3914 E10	4800 B2	6800 A3	7802 D8	7920 E10	9216 C3	9810 D8	9827 D7	9913 E8	
2205 D3	2220 C1	2825 D8	2910 F11	2928 D8	3214 F2	3231 E5	3811 A5	3826 E7	3842 A5	3893 F8	3915 D10	4802 E7	6805 F7	7805 F8	7921 D10	9218 F5	9811 E5	9829 F3	9914 F9	
2206 B2	2221 D1	2826 D5	2911 F11	3200 C2	3215 F2	3232 F5	3812 C5	3827 D7	3843 B5	3894 F7	3918 D10	4803 A4	6806 B6	7809 B2	7922 F10	9219 F5	9812 D5	9830 D4	9915 F9	
2207 D2	2222 F1	2830 C7	2912 E11	3201 D2	3216 F2	3233 F5	3813 B5	3828 D6	3844 B5	3895 C1	3919 E9	4804 B4	6831 B6	7820 E5	8202 D4	9220 E6	9814 F6	9831 E1	9931 E8	
2208 D3	2223 E1	2831 C7	2913 E11	3202 C1	3217 F2	3234 B2	3814 C8	3830 C7	3845 B4	3896 C3	3920 E10	4805 A4	6900 D8	7830 C6	9204 E4	9221 E6	9815 A6	9832 C2	E14 E7	

**F1**



FROM B

FROM N

FROM B

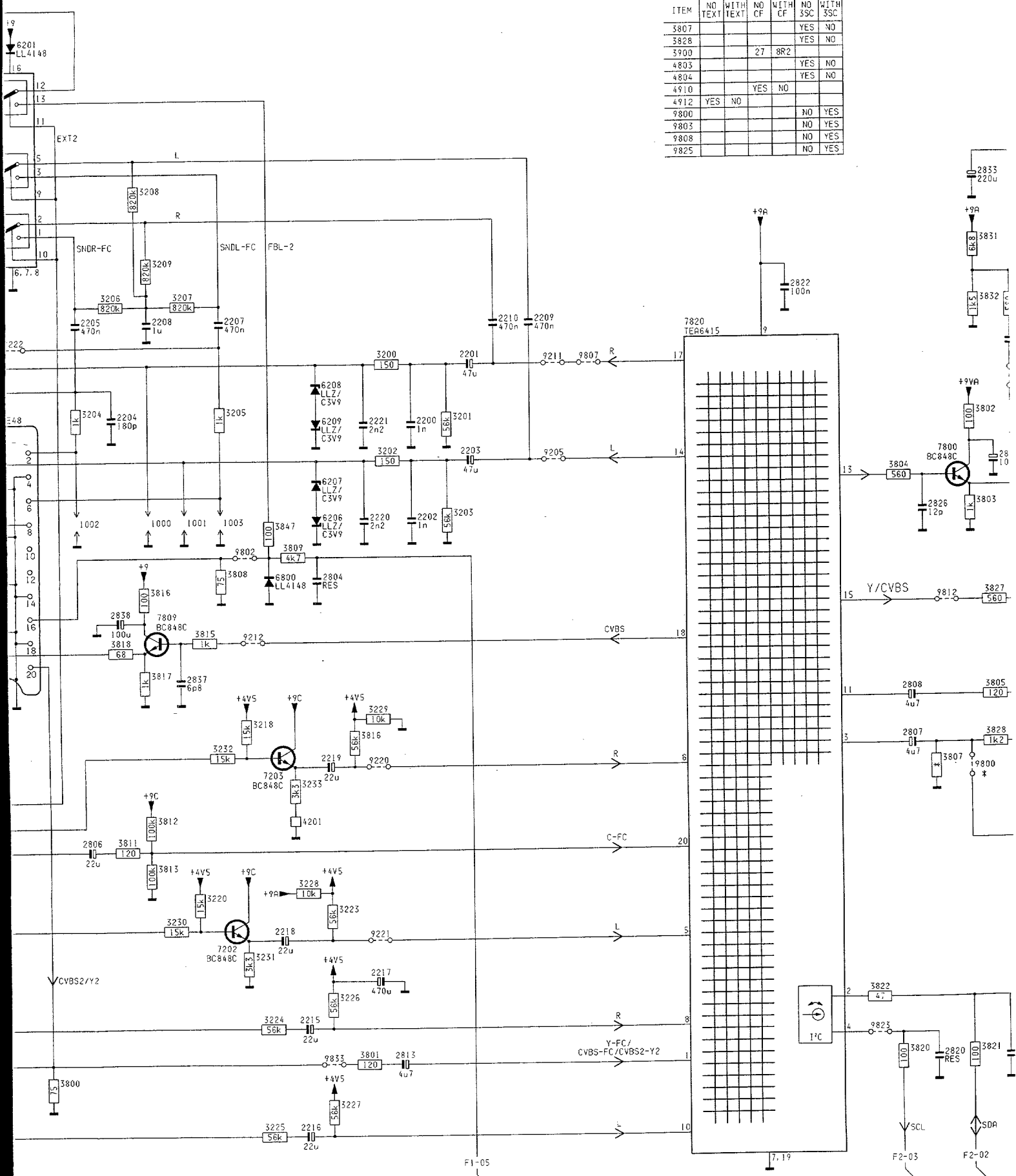
FROM N

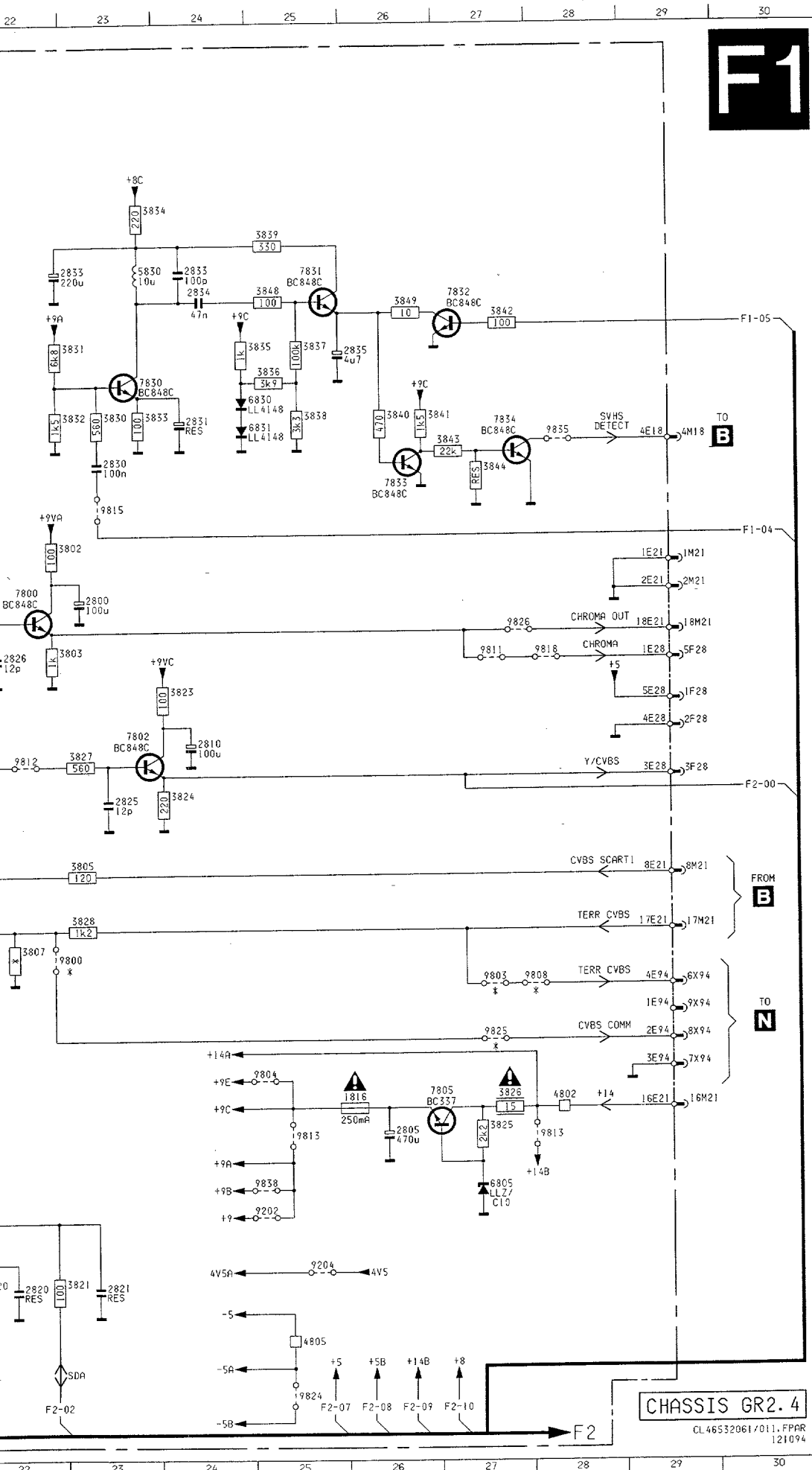
CVBS2/Y2

3800

280V  
220uF

ITEM	NO TEXT	WITH TEXT	NO CF	WITH CF	NO SSC	WITH SSC
3807					YES	NO
3828					YES	NO
3900			27	8R2		
4803					YES	NO
4804					YES	NO
4910			YES	NO		
4912	YES	NO				
7800					NO	YES
9803					NO	YES
9808					NO	YES
9825					NO	YES





**F1**

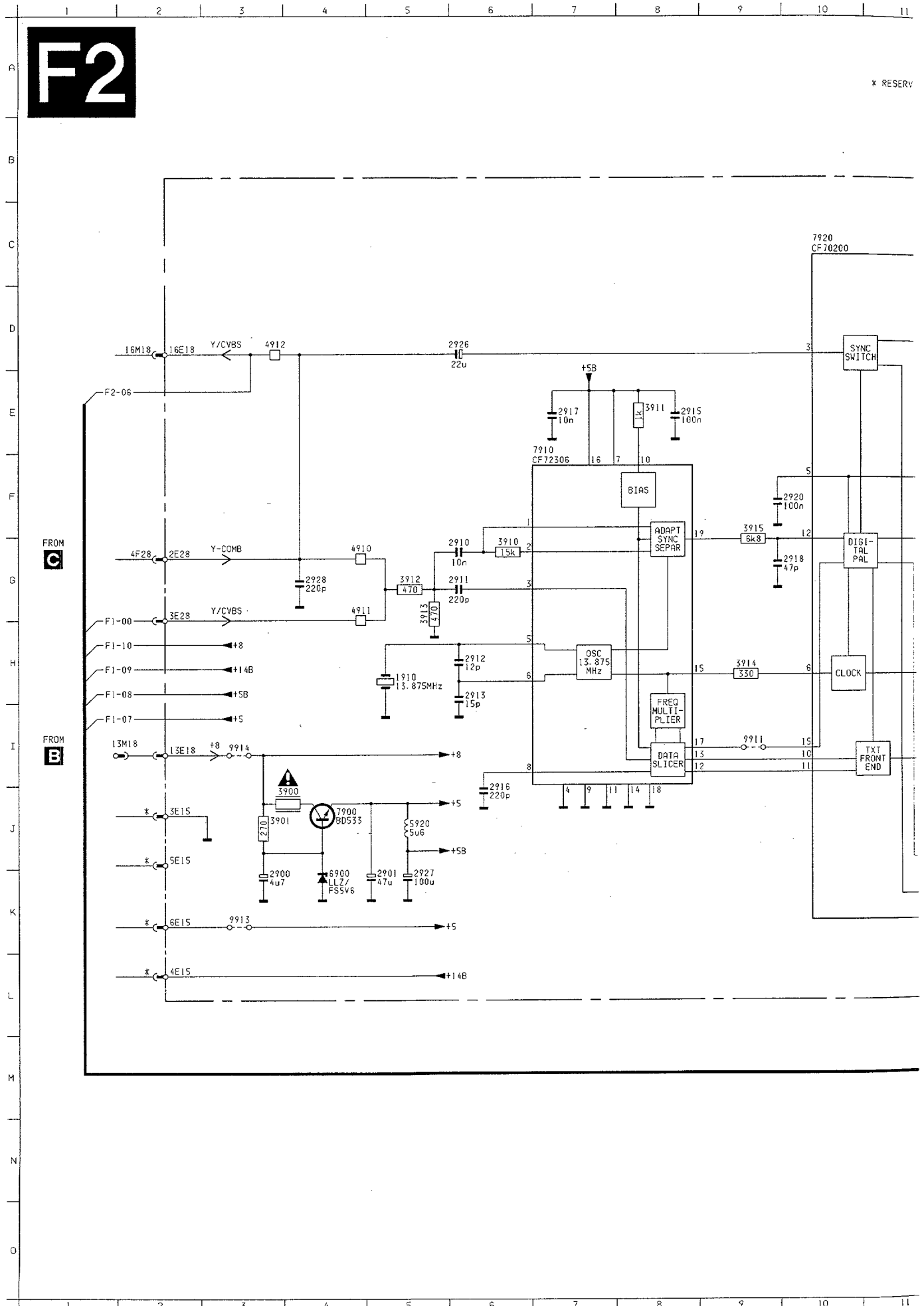
1000	G12	3828	J23
1001	G13	3830	D23
1002	G11	3831	D23
1003	G13	3832	D23
1216	L26	3833	D23
1800	F16	3834	R23
2201	E16	3835	D25
2202	G16	3836	D25
2203	F16	3837	D25
2204	E11	3838	D25
2205	F11	3839	C25
2206	E 9	3840	D26
2207	E13	3841	D26
2208	E12	3842	C27
2209	E17	3843	E27
2210	E17	3844	E27
2211	C 7	3845	I 6
2212	D 7	3846	H 6
2213	D 6	3847	G14
2214	C 6	3848	C26
2215	M14	3849	C26
2216	Q14	3851	G 6
2217	M15	3885	J 6
2218	L14	3886	J 6
2219	J14	3887	J 6
2220	G15	3890	H 5
2221	F15	3891	G 5
2222	D 5	3892	F 5
2223	C 5	3893	I 4
2800	F23	3894	I 5
2801	H14	3895	G 8
2805	L26	3896	G 8
2806	K11	3897	H 8
2807	J22	3898	G 8
2808	I22	3899	I 8
2810	H24	4201	K14
2813	N15	47	C 4
2814	F 7	4802	L28
2820	N22	4803	O 5
2821	N23	4804	M 5
2822	D20	4805	N25
2825	I23	5830	C23
2826	G22	6201	A11
2830	E23	6206	G14
2830	E23	6207	G14
2831	E24	6208	F14
2833	C23	6209	F14
2834	C24	6800	H14
2835	D26	6830	D25
2837	I15	6831	E25
2838	H12	7201	A10
2890	I 6	7202	L15
2908	C 3	7203	J14
2909	D 3	7204	D 8
3200	E15	7205	C 7
3201	F16	7800	F22
3202	G15	7802	H23
3203	F16	7805	L26
3204	F11	7807	H12
3205	F13	7820	E19
3206	D12	7830	D23
3207	D13	7831	C25
3208	C12	7832	C27
3209	D12	7833	E26
3210	C 8	7834	E27
3211	D 8	7839	F 6
3212	B 8	7892	I 5
3213	C 7	7893	H 5
3214	D 6	7894	G 5
3215	C 6	9202	M25
3216	D 5	9204	N25
3217	C 5	9205	F17
3218	J13	9206	K 6
3220	L13	9207	E 5
3223	L14	9208	E 4
3224	M14	9209	B 5
3225	O14	9210	B 4
3226	M14	9211	E17
3227	N14	9212	I13
3228	L14	9218	D 4
3229	J15	9219	C 4
3230	L12	9220	J15
3231	L13	9221	L15
3232	J13	9222	E11
3233	J14	9800	J22
3234	E 8	9802	H13
3235	E 8	9803	K27
3800	N11	9804	L25
3801	I 8	9805	O 4
3801	N15	9806	M 4
3802	F22	9807	E18
3803	G22	9808	K28
3804	G21	9809	H 4
3805	I23	9811	G27
3807	J22	9812	H22
3808	H13	9813	L25
3809	G14	9813	L28
3811	K12	9815	E23
3812	K12	9817	I 4
3813	K12	9818	G28
3814	F 8	9820	F 8
3815	I13	9823	N21
3816	H12	9824	O25
3816	J15	9825	K27
3817	I12	9826	G27
3818	I12	9833	N14
3819	F 8	9835	E28
3820	N22	9836	A 5
3821	N22	9837	B 5
3822	M21	9838	M25
3823	G24	E48	F11
3824	H24		
3825	L27		
3826	L27		
3827	H25		

CHASSIS GR2.4  
CL46532061/011.FPAR  
121094

# Teletext

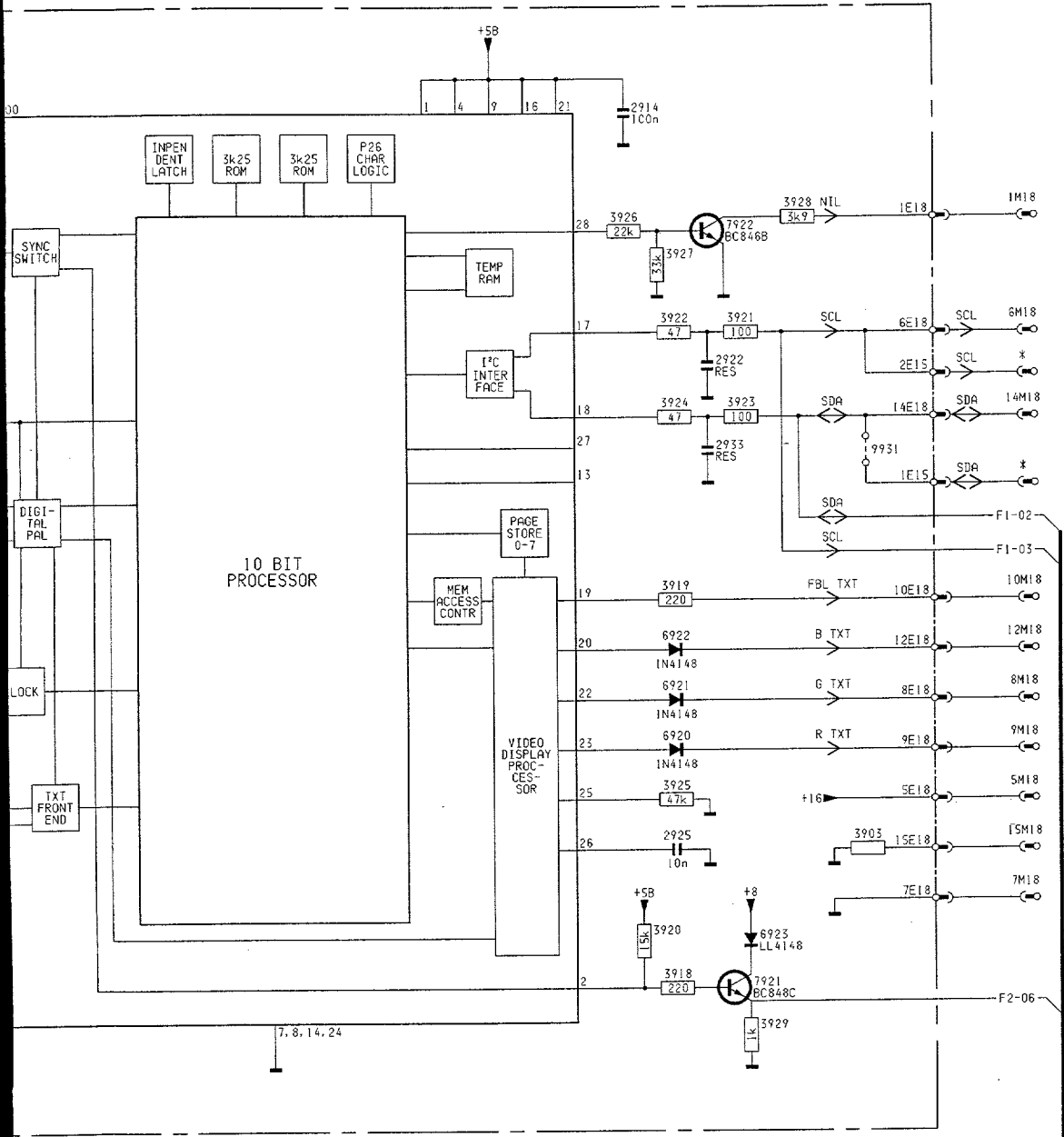
# F2

\* RESERV



F2

\* RESERVED FOR DOLBY



- 1910 H 5
- 2900 K 3
- 2901 K 5
- 2910 G 8
- 2911 G 8
- 2912 H 6
- 2913 H 6
- 2914 C16
- 2915 E 8
- 2916 J 6
- 2917 E 7
- 2918 G 7
- 2920 F 9
- 2922 E17
- 2925 J17
- 2926 D 6
- 2927 K 5
- 2928 G 3
- 2933 F17
- 3900 J 4
- 3901 J 3
- 3903 J18
- 3910 G 6
- 3911 E 8
- 3912 G 5
- 3913 G 5
- 3914 H 9
- 3915 F 9
- 3918 K17
- 3919 G17
- 3920 J16
- 3921 E17
- 3922 E17
- 3923 F17
- 3924 F17
- 3925 I17
- 3926 D16
- 3927 D16
- 3928 D18
- 3929 K17
- 4910 G 4
- 4911 G 4
- 4912 D 3
- 5920 J 5
- 6900 K 4
- 6920 I17
- 6921 H17
- 6922 H17
- 6923 J17
- 7900 J 4
- 7910 F 6
- 7920 C10
- 7921 K17
- 7922 D17
- 9911 I 9
- 9913 K 3
- 9914 I 3
- 9931 F18

TO B

TO B

CHASSIS GR2.4

CL46532061/012.FPAR  
121094

## 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 I<sup>2</sup>C 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.

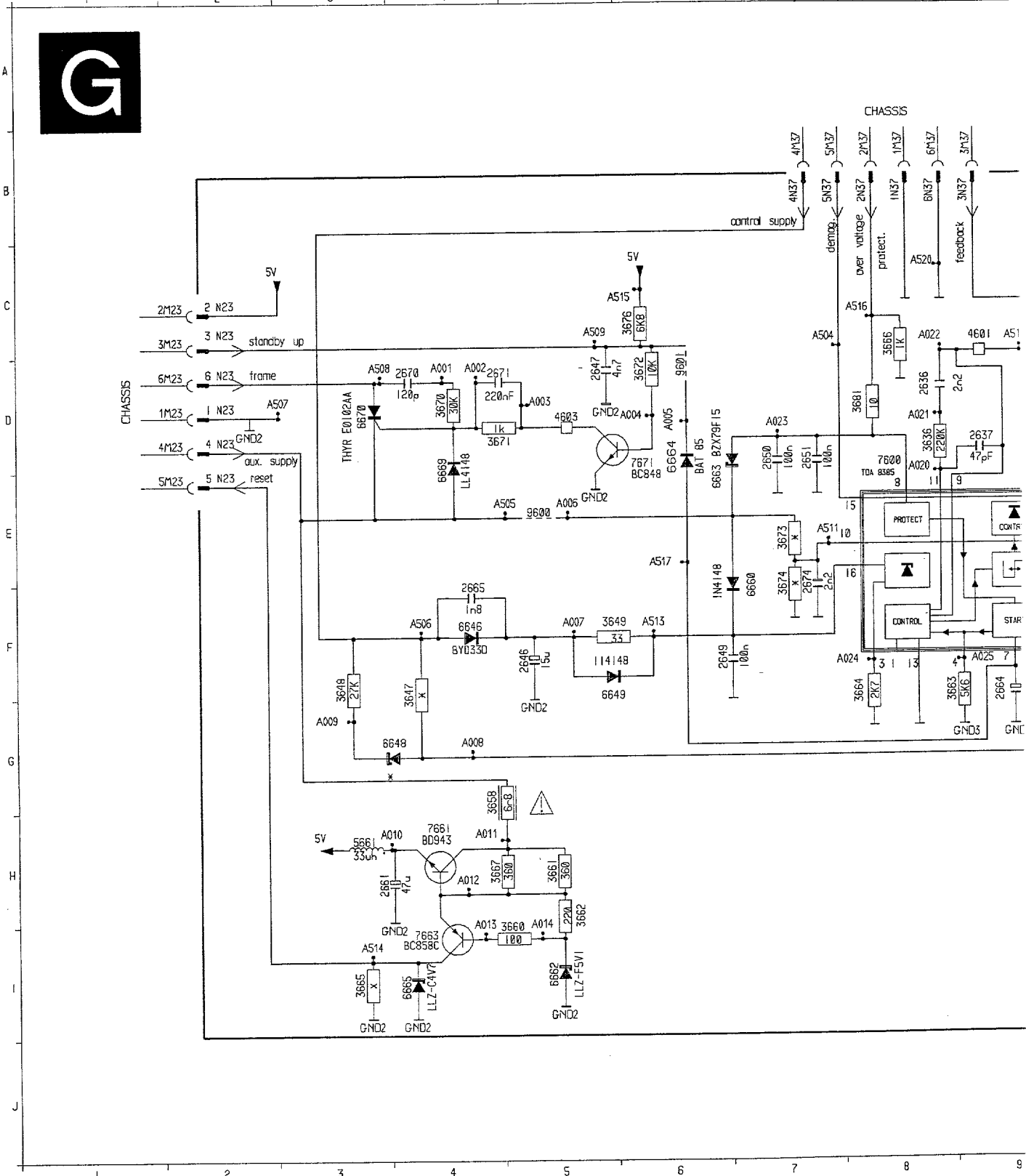
Via PLL the pulses in the TXT-decoder are synchronized to the sync. of the video signal.

Character generator is available in the IC.

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

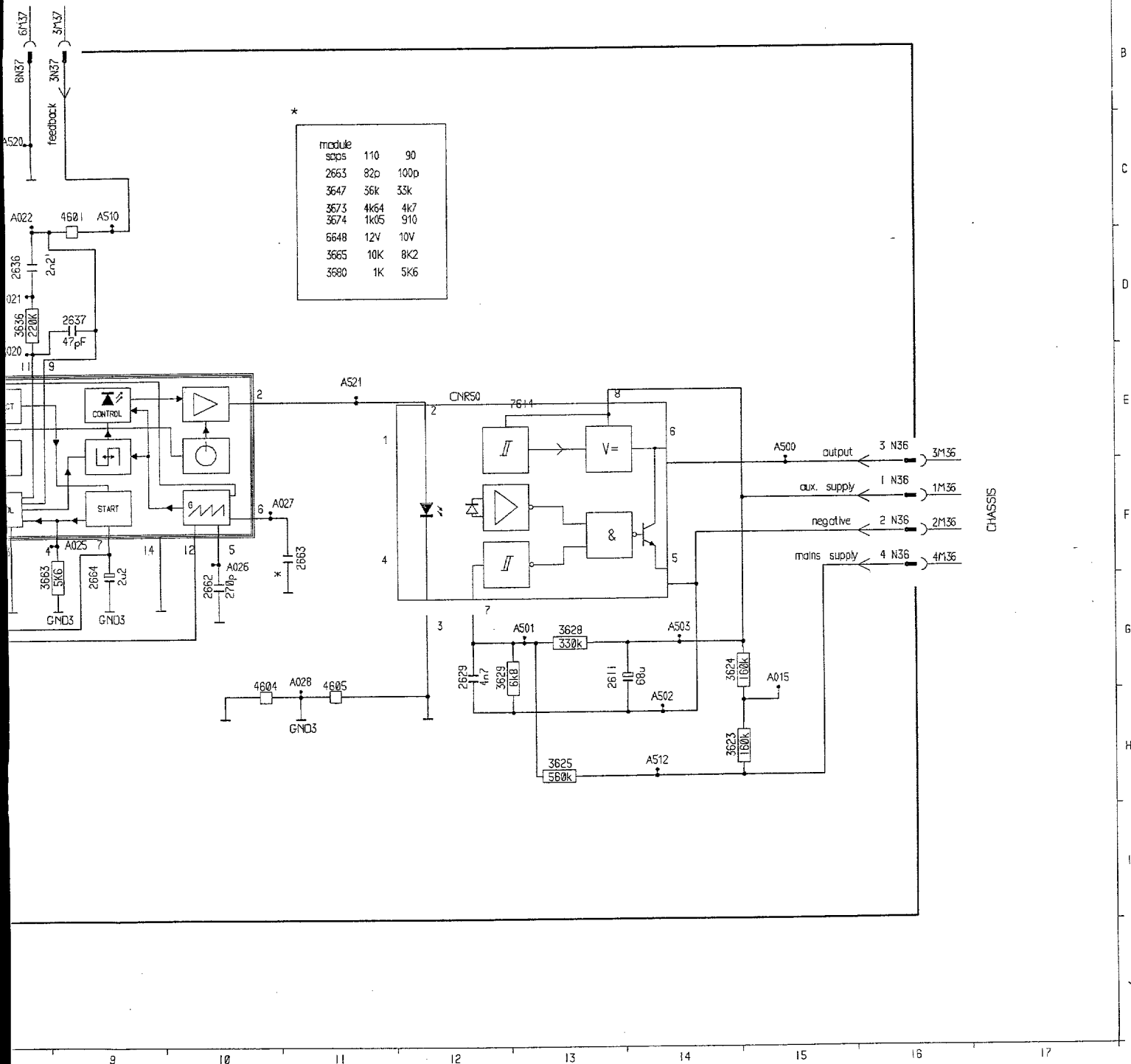
In the internal RAM 8 pages can be stored.

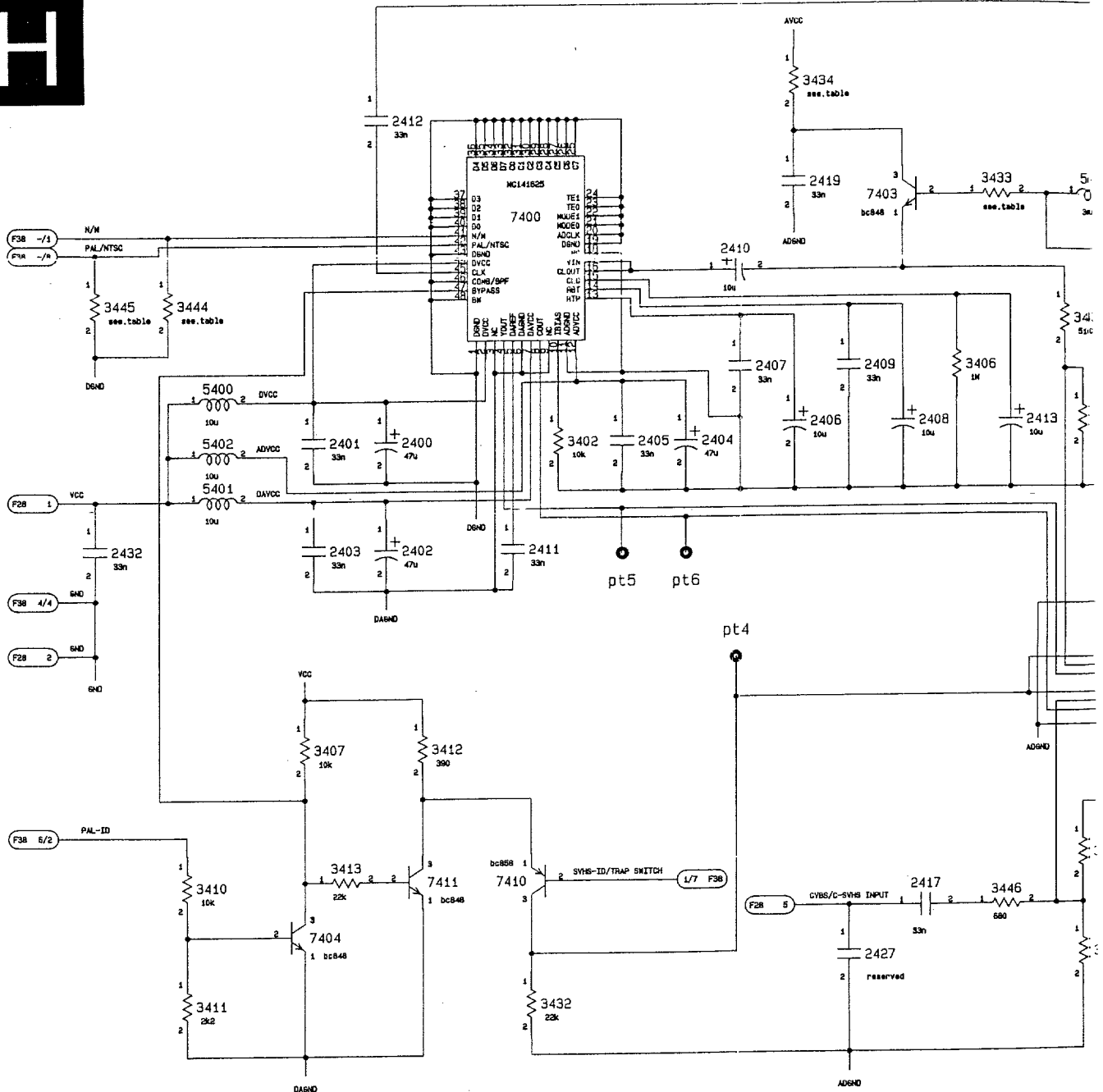
2611	G13	2647	D 5	2662	G10	2671	D 4	3628	G13	3649	F 8	3663	F 8	3670	D 4	3676	C 6	4604	G10	6649	F 5	6665	I 4	7661	H 4	A2
2629	G12	2649	D 6	2663	F11	2674	F 7	3629	G12	3650	F 8	3664	F 8	3671	D 4	3680	D 10	4605	G11	6650	F 5	6666	D 4	7662	H 4	A3
2636	D 8	2650	D 7	2664	F 9	2623	H14	3636	G 8	3658	F 8	3665	F 8	3672	D 4	3681	D 10	5651	H 3	6652	F 5	6667	D 4	7663	H 4	A4
2637	D 9	2651	D 8	2665	F 4	2624	G14	3647	F14	3661	H 8	3666	F 8	3673	D 4	4601	D 10	5646	G 4	6653	F 5	6668	D 4	7664	H 4	A5
2646	F 5	2661	H 3	2678	D 4	2625	H13	3648	F 3	3662	H 8	3667	H 8	3674	D 4	4603	D 10	5648	G 4	6654	F 5	6669	D 4	7661	H 4	A6





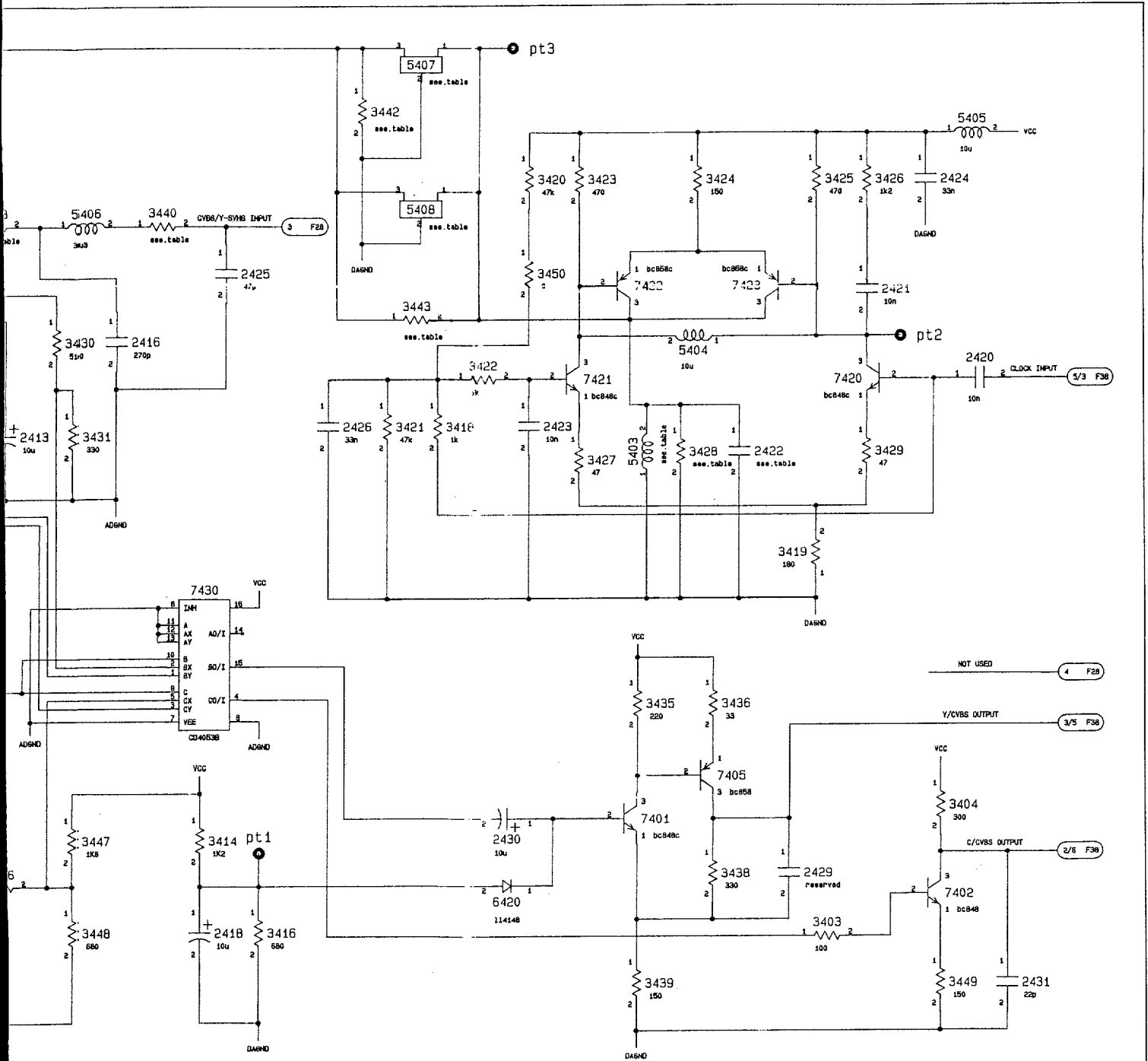
7661	H 4	A001	D 4	A006	E 5	A011	H 4	A020	E 8	A025	F 9	A501	G13	A506	F 4	A511	E 7	A516	C 8	A521	E11	N23	F 2	N36	F10	N37	G 7		
7663	I 4	A002	D 4	A007	F 5	A012	H 4	A021	D 8	A026	F10	A502	H14	A507	D 3	A512	F14	A517	F 6	A522	D12	N23	F 2	N37	G 7	N37	G 8		
7671	I 4	A003	D 5	A008	G 4	A013	I 4	A022	C 8	A027	F11	A503	G14	A508	D 3	A513	F14	A518	I10	N23	D12	N23	F 2	N37	G 7	N37	G 8		
9600	M 6	A004	D 6	A009	G 3	A014	I 5	A023	D 7	A028	G11	A504	C 7	A509	C 5	A514	I 1	A519	I10	N23	D12	N23	F 2	N37	G 7	N37	G 8		
9601	D 6	A005	D 6	A010	H 3	A015	G15	A024	F 8	A500	E15	A505	E 5	A510	C 9	A515	C 6	A520	C 9	N23	D12	N23	F 2	N37	G 7	N37	G 8		
		9		10		11		12		13		14		15		16		17											





COMPONENTS

	2422	3428	5403	3443	3442	5407	5408	3444	3445	3440	3433	3434	sta
STANDARD VERSION :	100p	820	0.68u	0	-	-	-	0	0	100	220	220	
OVERSEAS VERSION :	-	240	-	-	-	SFE14-3	SFE17-7	-	-	120	47	0	



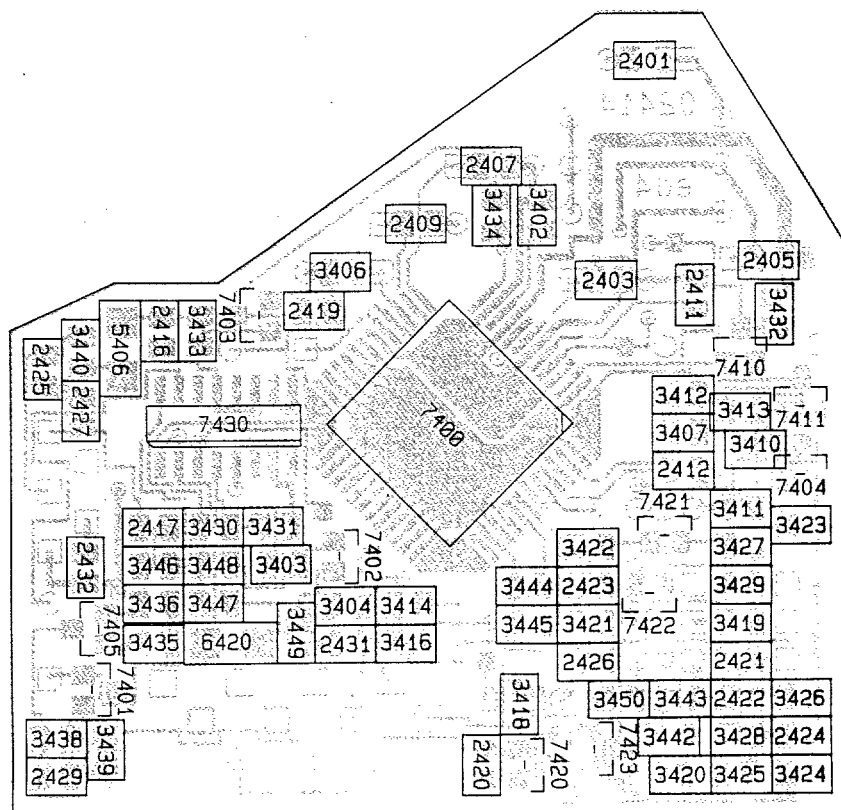
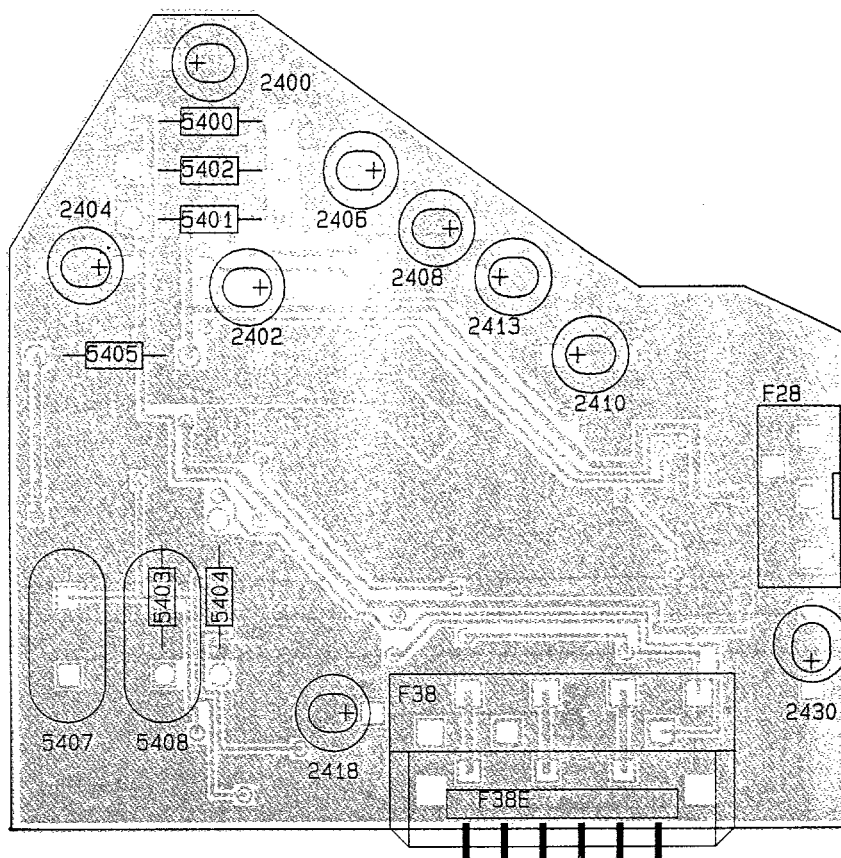
CONNECTOR F3B

12 NC NUMBER

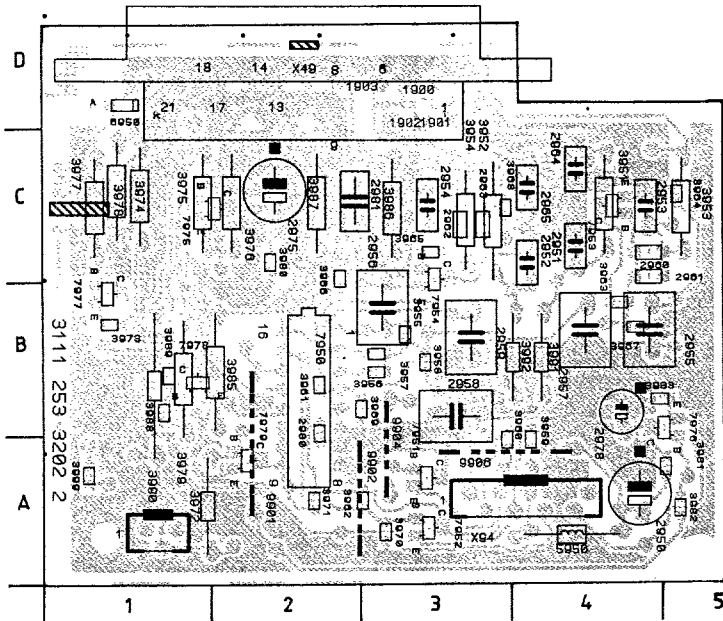
standar ver / overseas ver

- 6 5 4 3 2 1 -
- 1 2 3 4 5 6 7 8

- 3111 258 020:0
- 3111 258 002:0



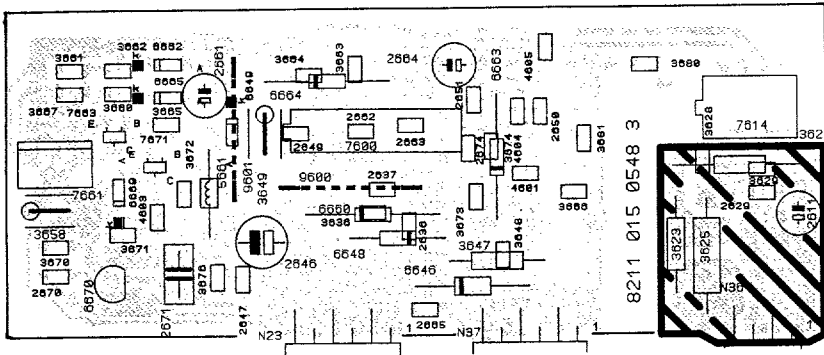
# Third scart module 1006



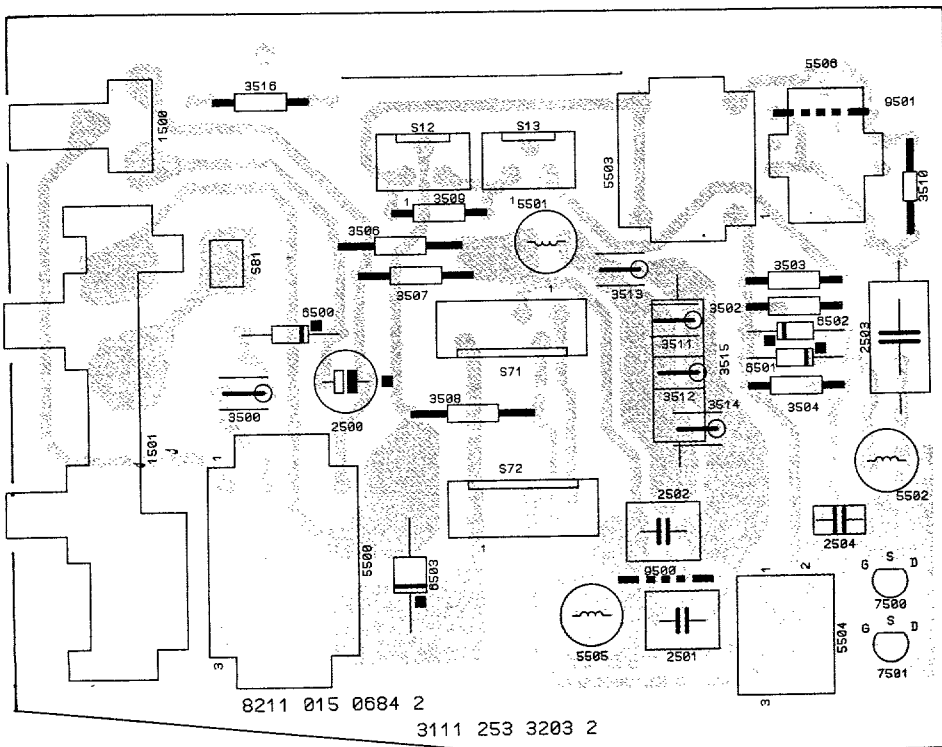
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1901 D3	3963 B4	7954 C3
1902 D3	3964 C5	7975 C2
1503 D3	3965 C3	7976 B5
2950 A4	3966 C2	7977 B1
2951 C4	3967 B4	7978 B2
2952 C4	3968 C4	7979 A2
2953 C5	3969 B3	9901 B2
2954 C3	3970 A3	9902 A3
2955 B5	3971 A2	9904 A3
2956 B3	3972 A2	9906 A4
2957 B4	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

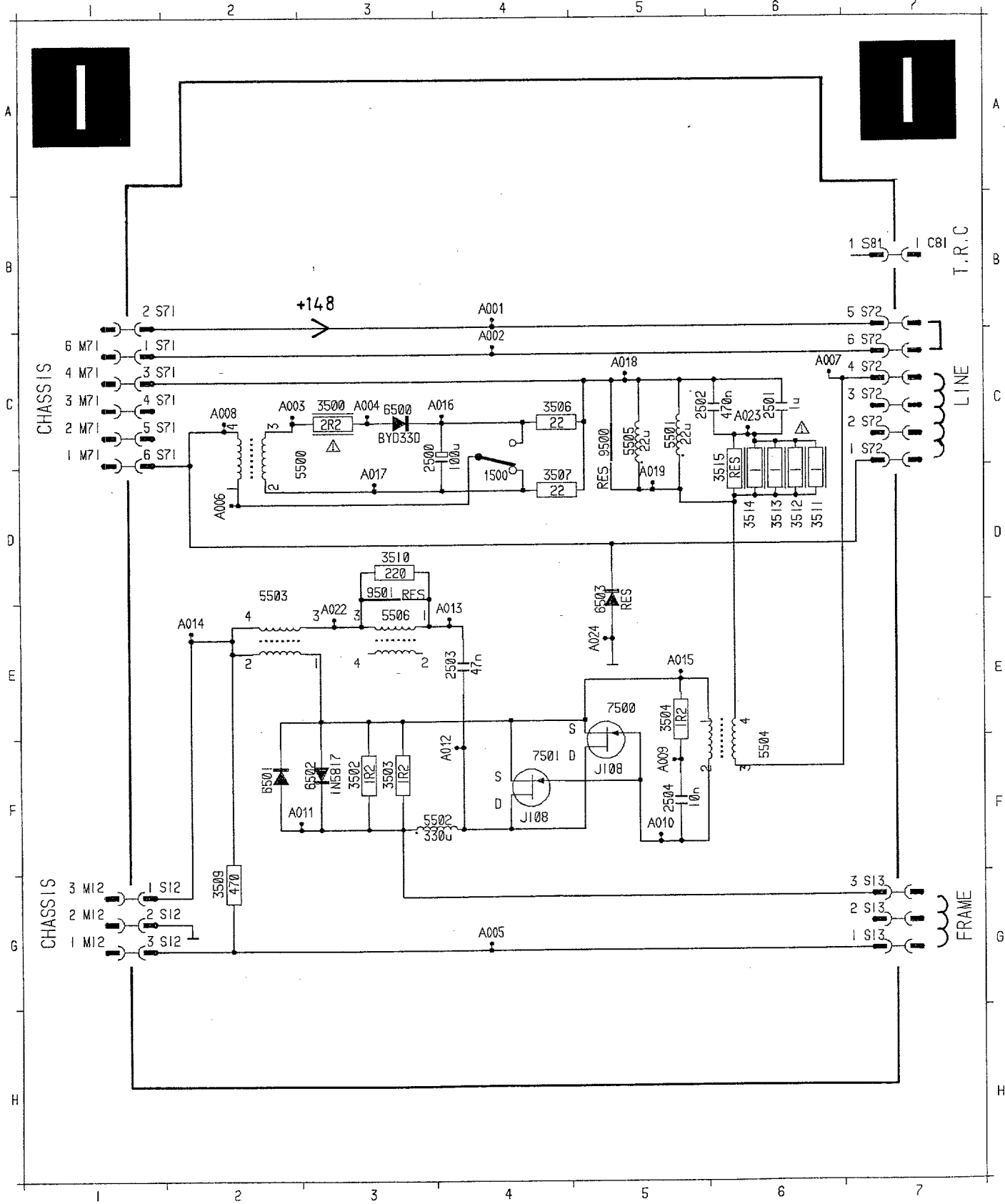


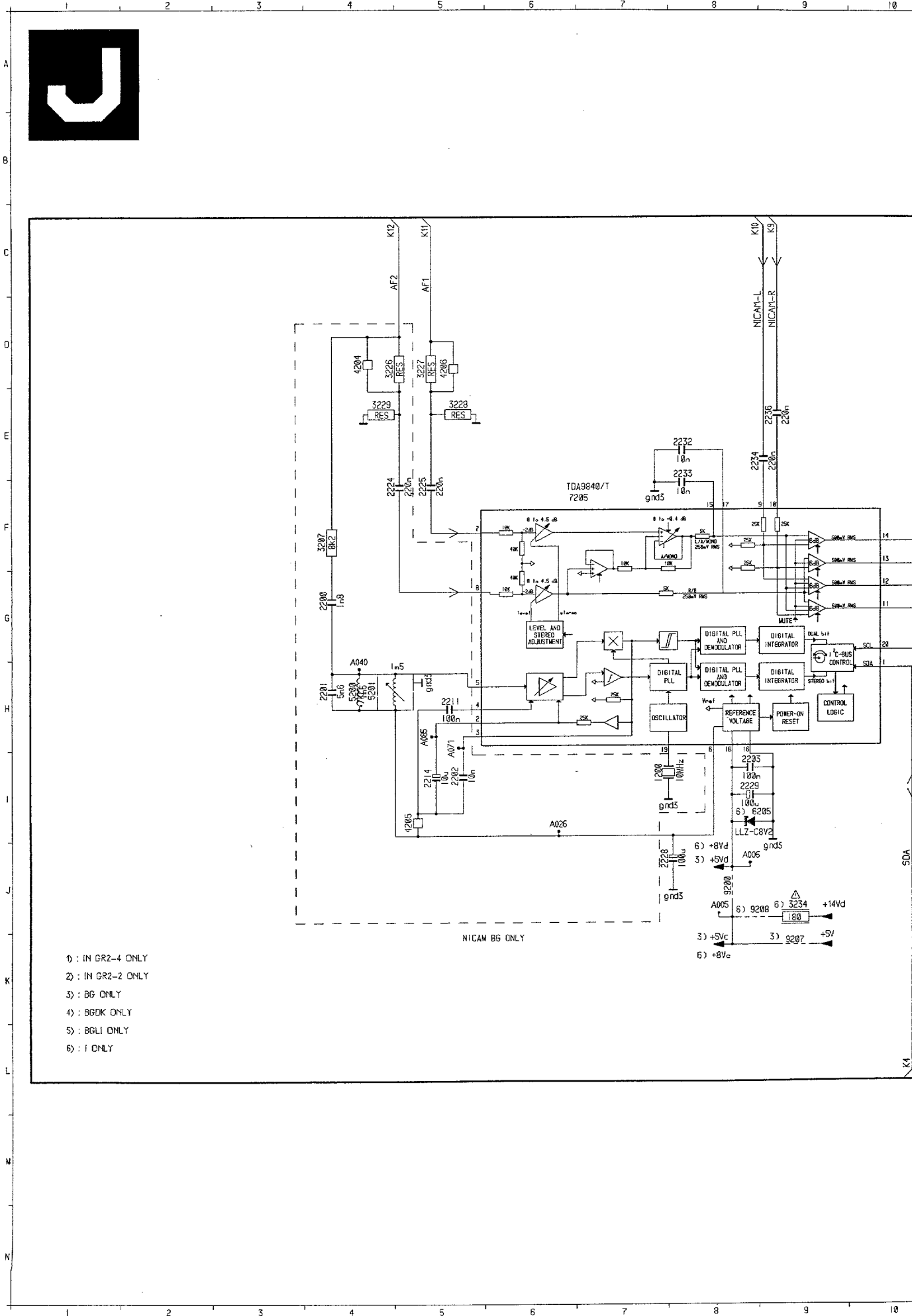
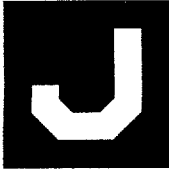
## SCANNING MODULE 1009



# Scanning module

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1501	A 4	3504	E 5	3514	D 6	5506	C 5	A001	B 4	A010	F 5	A019	D 5	S12	G 2	S71	C 2		
2500	C 3	3506	C 4	3515	D 6	6500	C 3	A002	C 4	A011	F 2	A020	B 5	S12	G 2	S71	C 2		
2501	C 6	3507	D 4	3516	B 4	6501	C 3	A003	C 3	A012	F 4	A021	B 5	S12	G 2	S71	C 2		
2502	C 4	3508	B 3	5500	C 3	6502	F 3	A004	A 4	A013	E 2	A022	F 3	S12	G 2	S71	C 2		
2503	F 4	3509	G 2	5501	C 3	6503	F 3	A005	B 4	A014	E 2	A023	C 3	S12	G 2	S71	C 2		
2504	F 5	3510	D 3	5502	D 4	7500	F 4	A006	G 4	A015	E 2	A024	F 5	S12	G 2	S71	C 2		
3500	C 3	3511	D 6	5503	D 4	7501	F 4	A007	C 2	A016	C 4	A025	F 5	S12	G 2	S71	C 2		
3502	F 3	3512	D 6	5504	D 6	9500	C 5	A008	C 2	A017	D 3	A026	G 3	S12	G 2	S71	C 2		





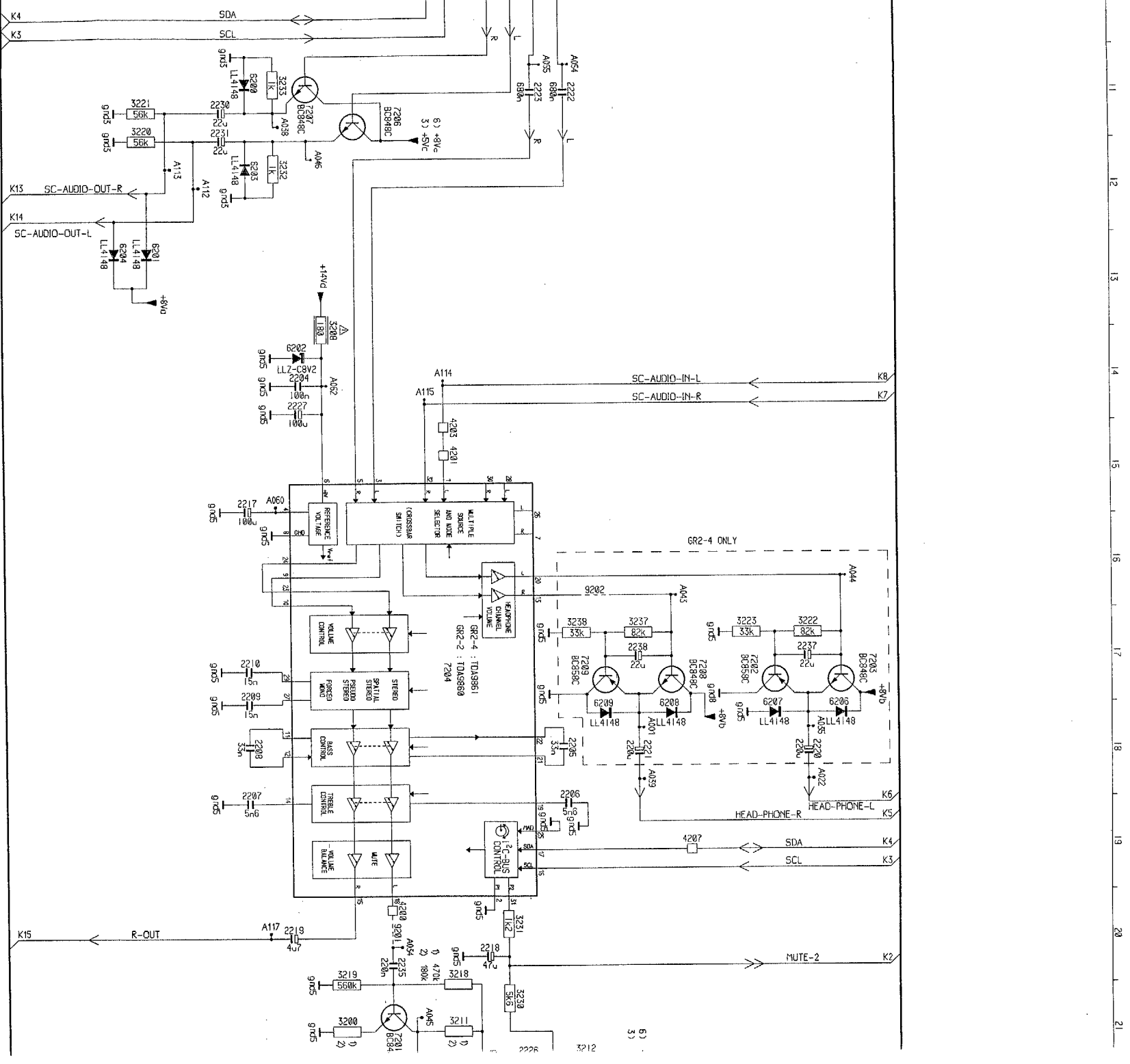
- 1) : IN GR2-4 ONLY
- 2) : IN GR2-2 ONLY
- 3) : BG ONLY
- 4) : BGDK ONLY
- 5) : BGLI ONLY
- 6) : I ONLY

NICAM BG ONLY

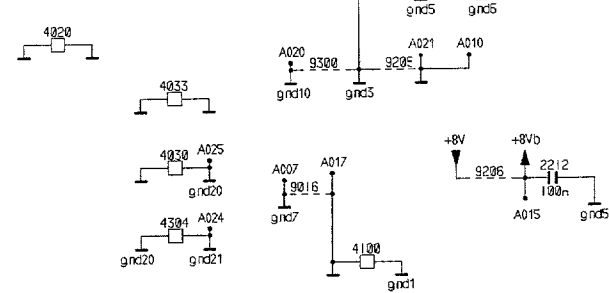
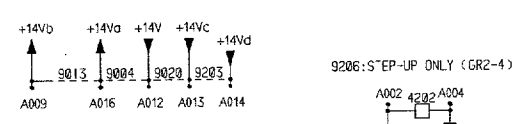
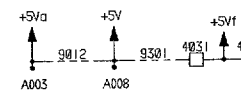
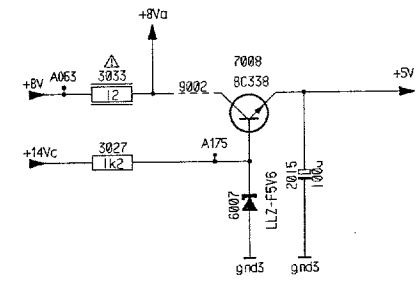
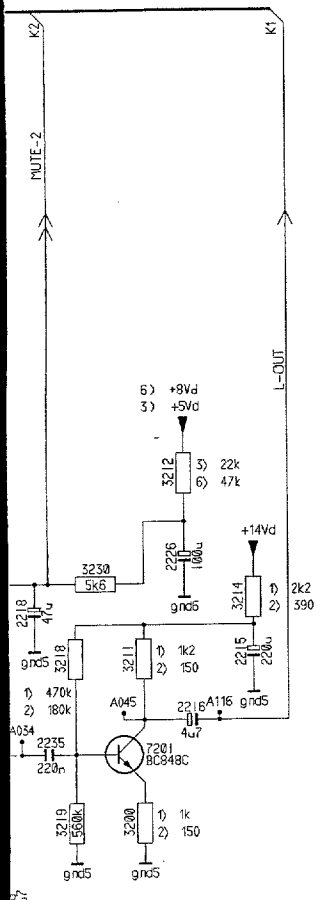
K1 K3



Module FI-Son Nicam

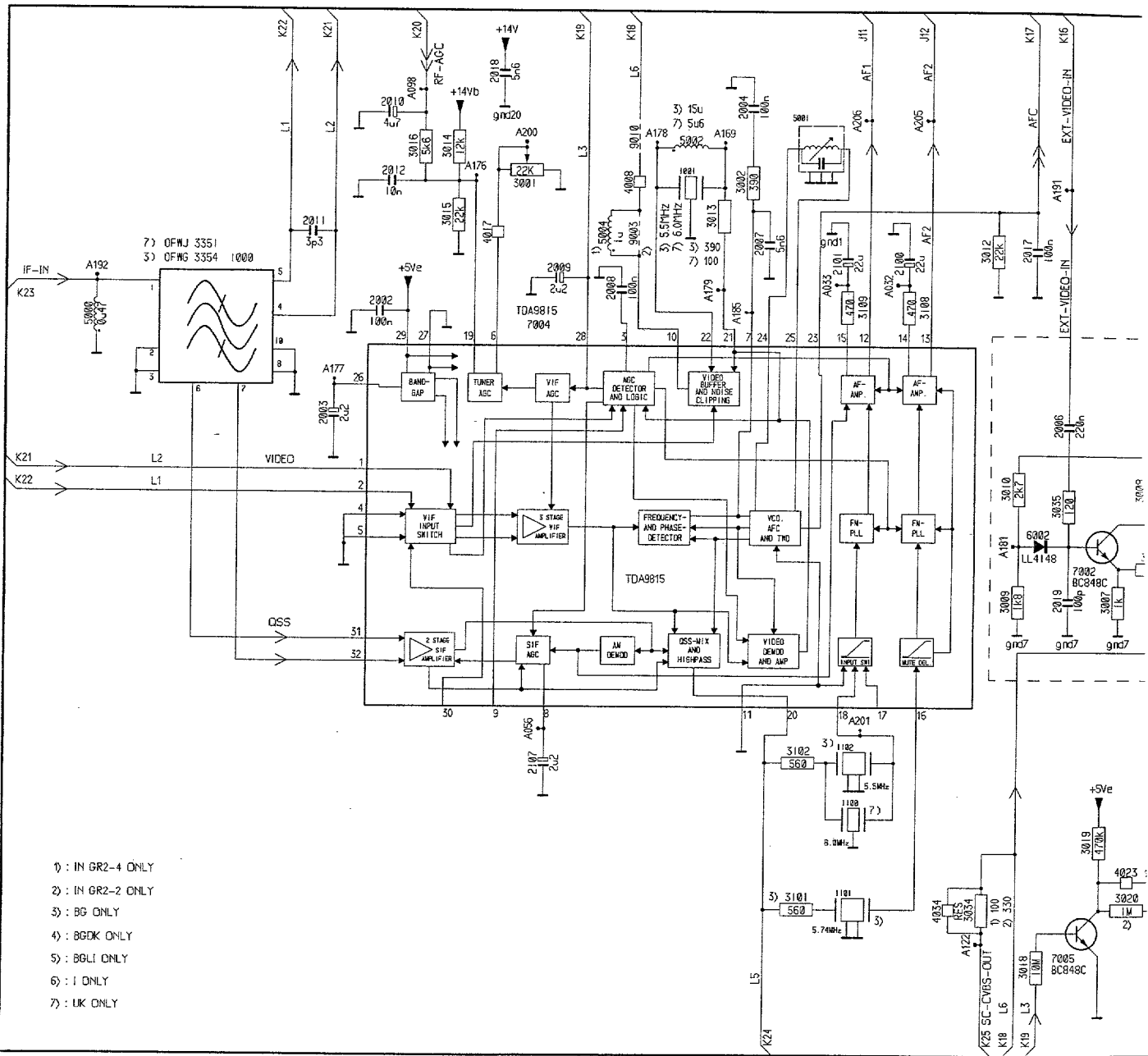
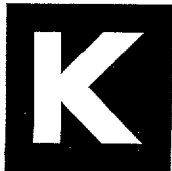


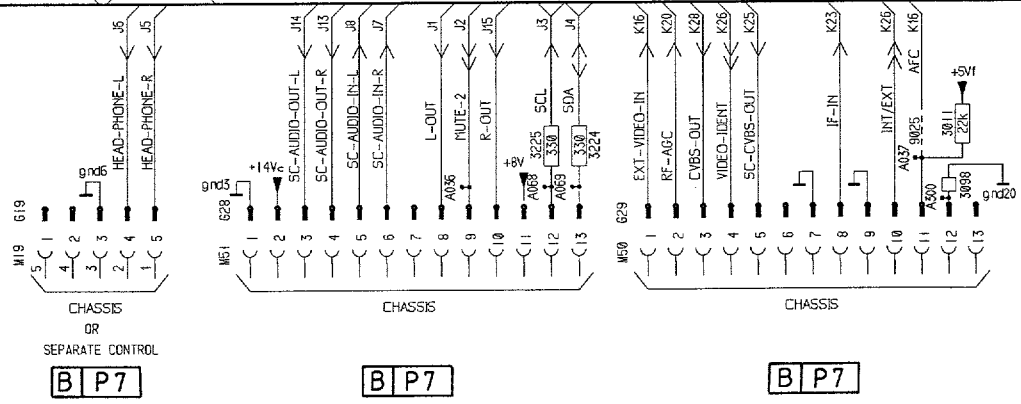
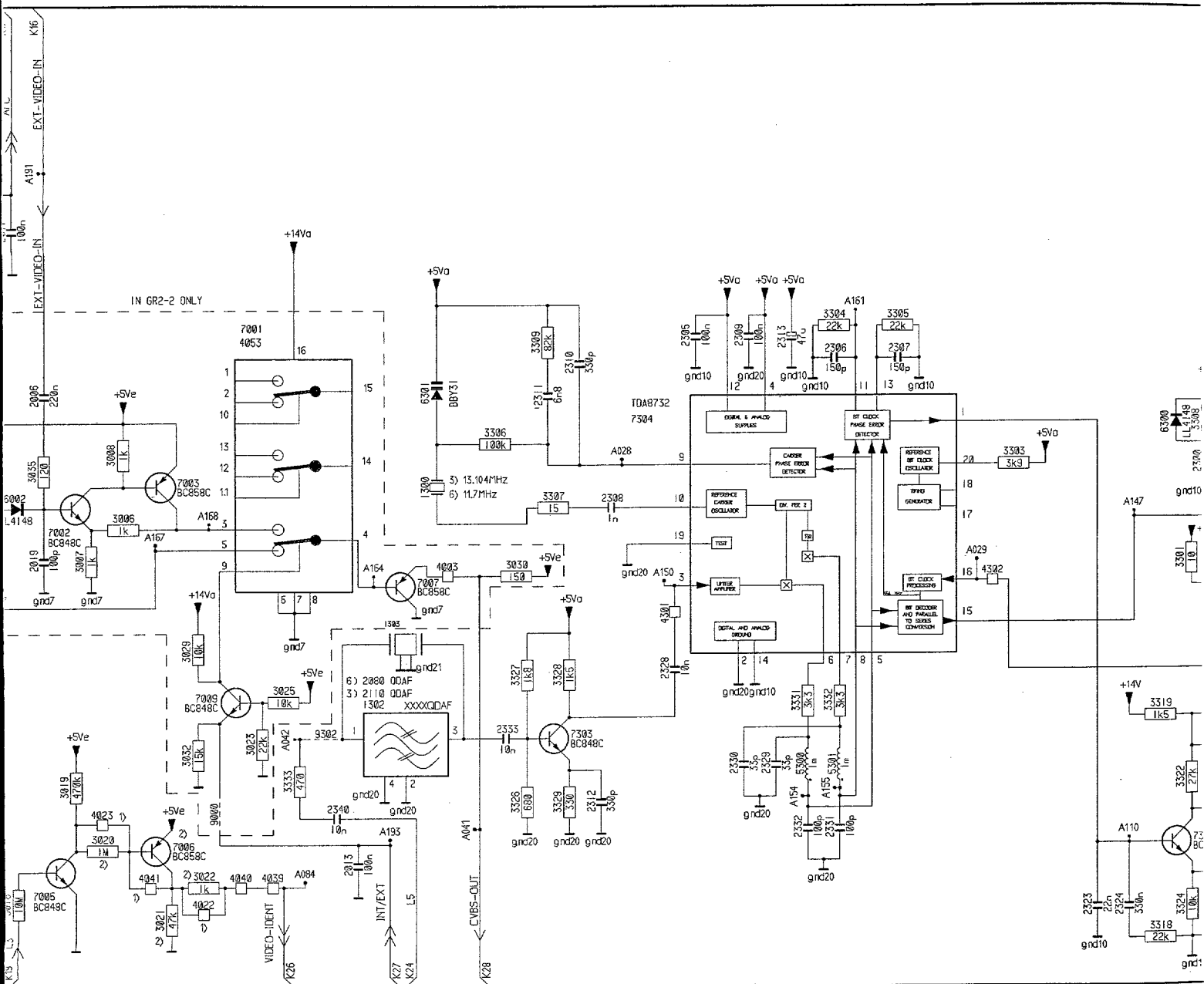
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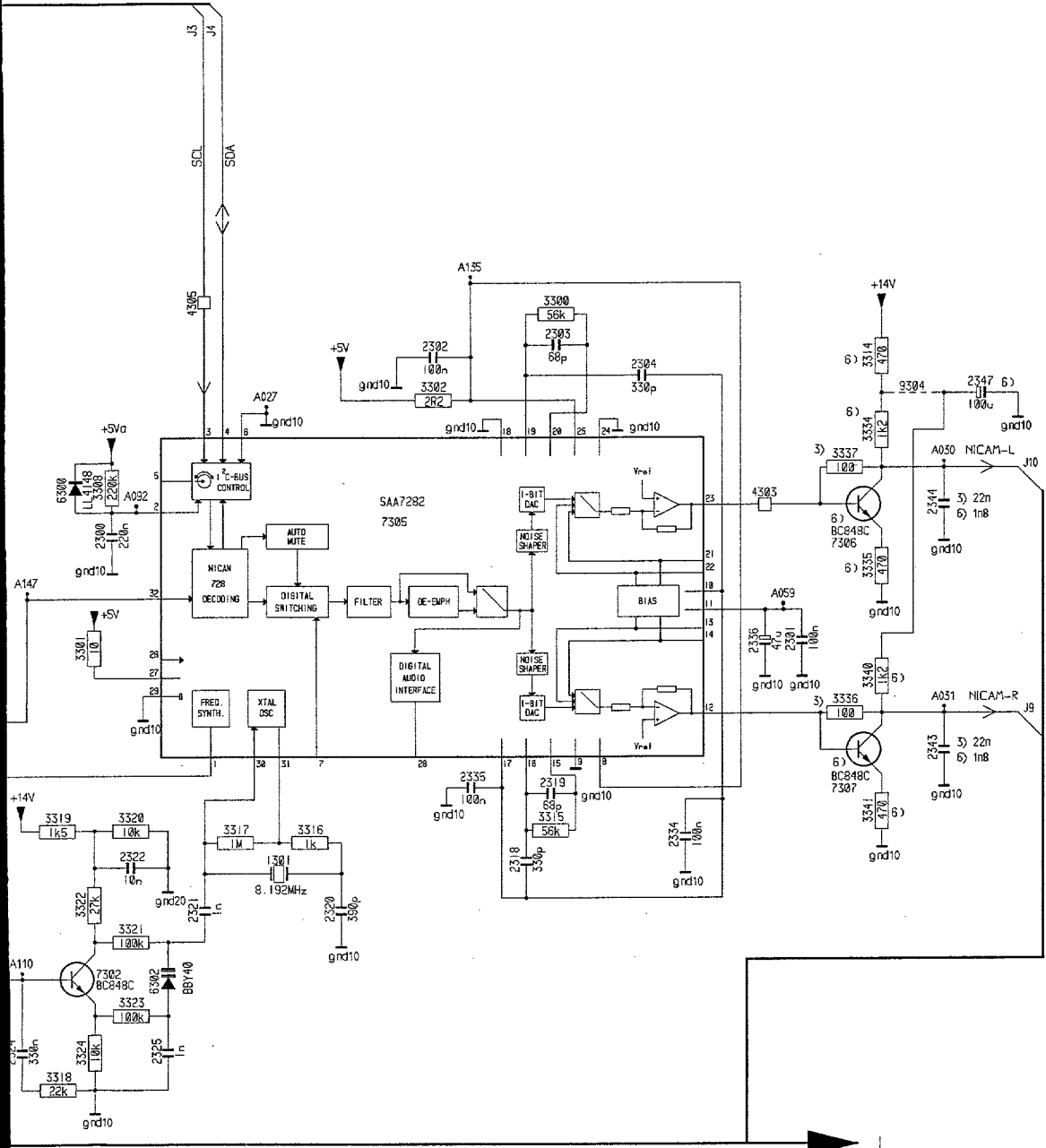


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2015	E26	A044	C16
2200	G 4	A045	H21
2201	H 4	A046	I12
2202	I 5	A054	F11
2203	I 8	A055	F11
2204	I14	A060	I15
2205	F18	A062	I14
2206	F18	A063	D24
2207	J18	A071	H 5
2208	I18	A085	H 5
2209	J17	A112	J12
2210	J17	A113	J12
2211	H 5	A114	G14
2212	K28	A115	H14
2213	I 5	A116	H22
2215	G22	A117	I26
2216	H21	A175	E26
2217	J15		
2218	G20		
2219	I20		
2220	D18		
2221	E18		
2222	F11		
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		
3027	E25		
3033	D25		
3200	I21		
3207	F 4		
3208	I14		
3211	G21		
3212	F21		
3214	G22		
3218	G20		
3219	I20		
3220	K11		
3221	K11		
3222	D17		
3223	D17		
3226	D 4		
3227	D 5		
3228	E15		
3229	E15		
3230	G21		
3231	G20		
3232	I12		
3233	I12		
3234	J 9		
3237	E17		
3239	F17		
4020	J24		
4030	K25		
4031	G26		
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4037	G27		
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4205	I 5		
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4207	E18		
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6208	E18		
6209	F18		
7008	D26		
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7207	I11		
7208	E17		
7209	F17		
9002	E25		
9004	I25		
9012	G25		
9015	I24		
9016	K26		
9020	I25		
9200	J 8		
9201	H20		
9202	F16		
9203	I25		
9204	I25		
9205	J26		
9206	K27		
9207	K 9		
9208	J 9		
9209	J27		
9300	J26		
9301	G26		
A001	E18		
A002	I27		
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A004	I27		
A005	J 8		
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A007	K26		
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A022	C18		
A023	I27		
A024	K25		
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A040	H 4		

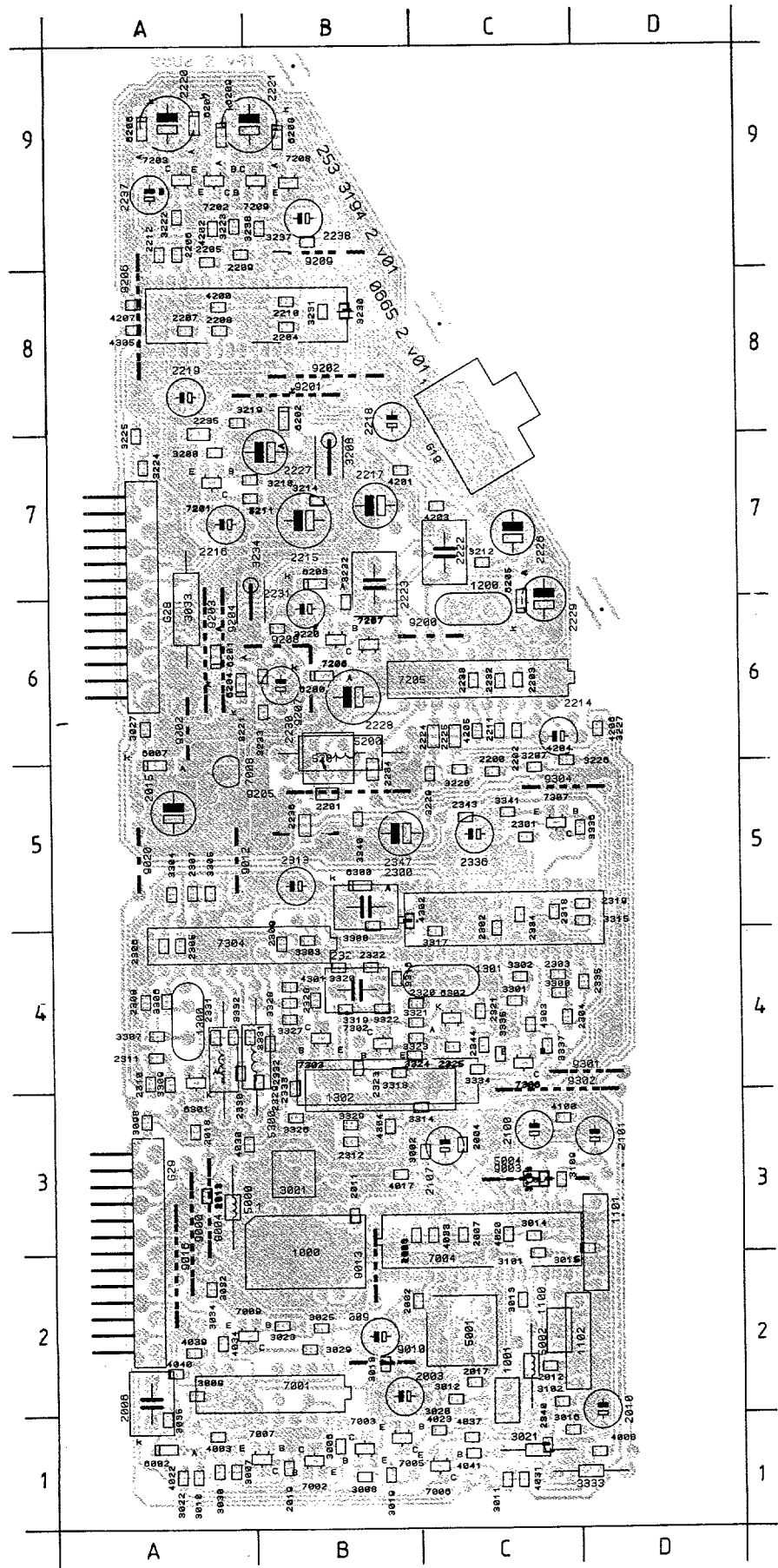
# Nicam IF-Sound module/Nicam ZF-Ton module





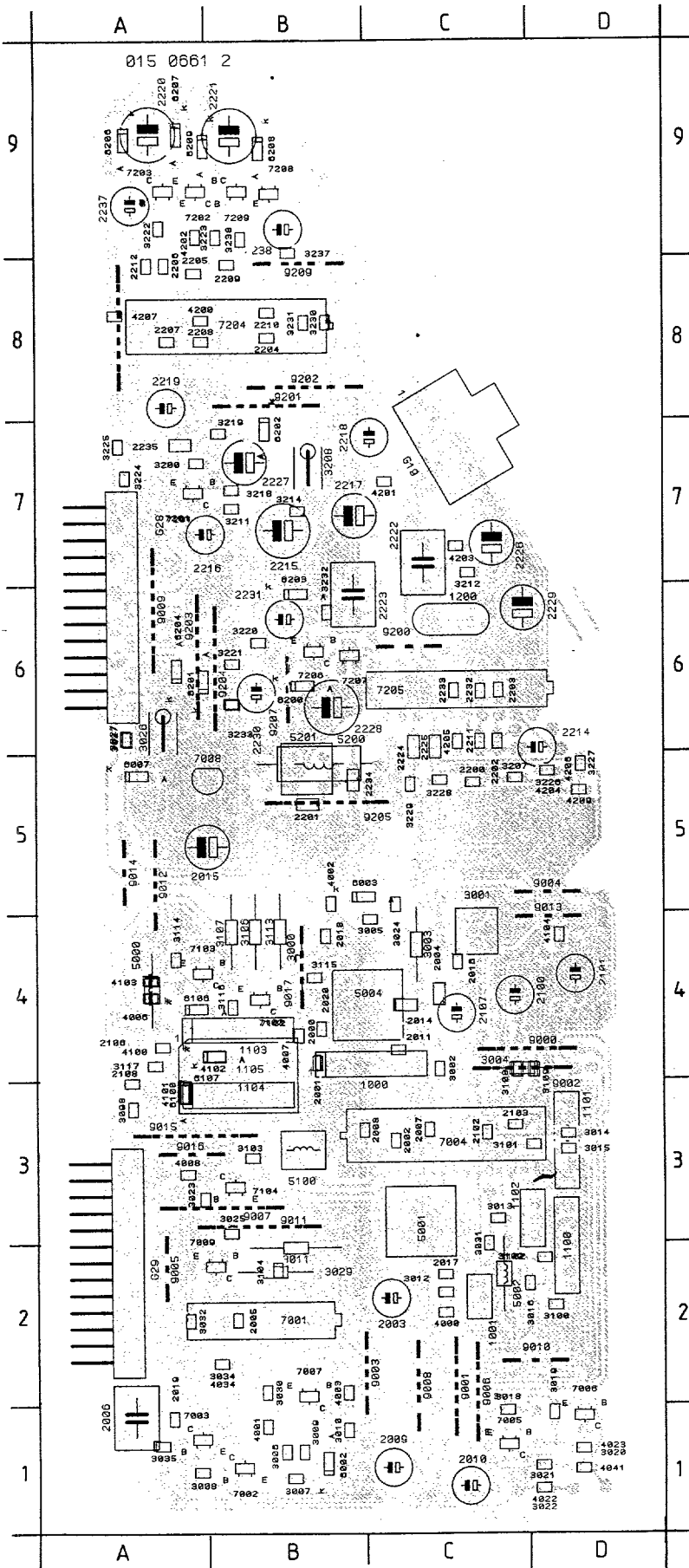


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1100	I 8	7004	E 5
1101	J 8	7005	K10
1102	J 9	7006	J11
1300	G14	7007	H13
1301	I22	7009	I12
1302	I13	7302	J21
1303	H13	7303	I15
2002	E 3	7304	F19
2003	E 3	7305	F19
2004	C 7	7306	G27
2006	F10	7307	I27
2007	D 7	9000	J12
2008	E 5	9003	D 6
2009	C 5	9010	C 6
2010	C 4	9025	L19
2011	D 5	9302	I13
2012	D 4	9304	E27
2013	J13	A027	E22
2017	D10	A028	F15
2018	G10	A029	G19
2019	G10	A030	F28
2100	D 8	A031	H28
2101	D 8	A032	E 8
2107	F21	A033	E 8
2300	F21	A036	M16
2301	E26	A037	M19
2302	E24	A041	J14
2303	E25	A042	I 5
2304	E25	A056	I 5
2305	E19	A059	G26
2306	E17	A068	M16
2307	E18	A069	M17
2308	G15	A084	J12
2309	E17	A092	F21
2310	E18	A093	C 4
2311	F19	A110	J20
2312	J15	A122	J 9
2313	E17	A135	D24
2318	I24	A147	G20
2319	H25	A150	G16
2320	I25	A154	J17
2321	I22	A155	J17
2322	I21	A161	E18
2323	K20	A164	G13
2324	K20	A167	G11
2325	K21	A168	G11
2328	H16	A169	C 7
2329	I17	A176	D 5
2330	I16	A177	E 3
2331	J17	A178	C 6
2332	J17	A179	E 7
2333	I14	A181	G19
2334	I26	A185	E 7
2335	H24	A191	D10
2336	G26	A192	D 1
2340	J13	A193	J13
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3005	G11	G19	M13
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3008	F11	G19	M13
3009	G 9	G19	M13
3010	G 9	G19	M13
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	K10	G28	M16
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3029	H11	G29	M17
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3032	I11	G29	M18
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3036	M20	G29	M18
3101	J 8	G29	M18
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3109	E 8	G29	M19
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5004	D 6		
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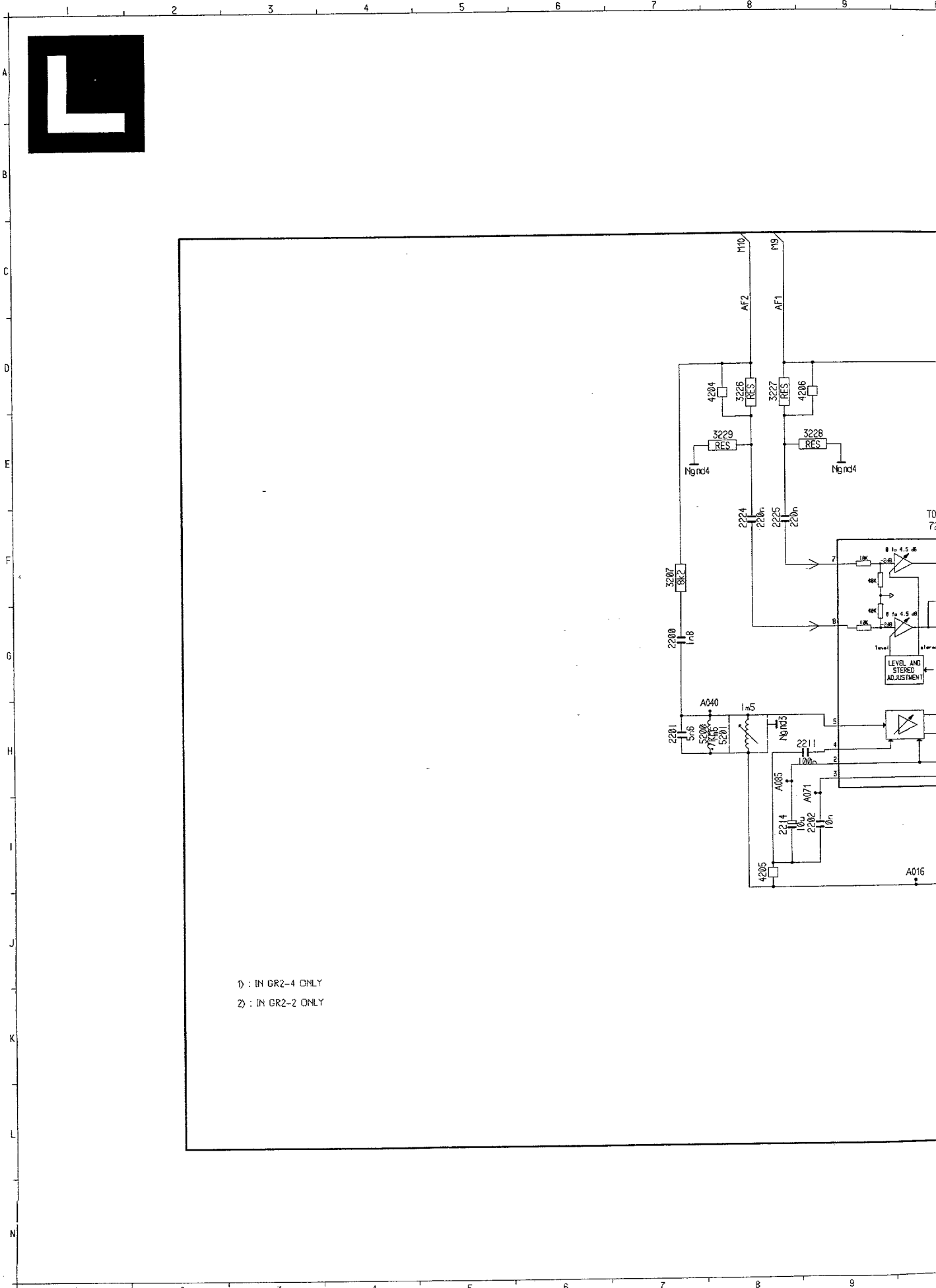
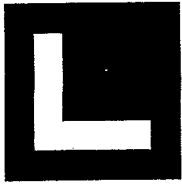


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1100	A2	3020	A1	6203	B7
1101	A3	3021	A1	6204	C6
1102	A2	3022	C1	6205	A6
1200	A6	3023	B2	6206	C9
1300	C4	3025	B2	6207	C9
1301	A4	3027	C6	6208	B9
1302	B3	3029	B2	6209	C9
1303	B3	3030	C1	6300	B5
2002	B2	3032	C2	6301	C4
2003	B2	3033	C6	6302	A4
2004	A3	3034	C2	7001	C2
2006	C2	3035	C1	7002	B1
2007	A3	3038	C3	7003	B1
2008	B3	3101	A2	7004	A3
2009	B2	3102	A2	7005	B1
2010	A1	3108	A3	7006	A1
2011	B3	3109	A3	7007	C1
2012	A2	3200	C7	7008	C5
2013	C3	3207	A5	7009	C2
2015	C5	3208	B7	7201	C7
2017	A2	3211	C7	7202	C9
2018	C3	3212	A7	7203	C9
2019	B1	3214	B7	7204	C8
2100	A3	3218	C7	7205	A6
2101	A3	3219	C8	7206	B6
2107	A3	3220	B6	7207	B6
2200	A5	3221	C8	7208	B9
2201	B5	3222	C9	7209	C9
2202	A6	3223	C9	7302	B4
2203	A6	3224	C7	7303	B4
2204	B8	3226	A6	7304	C4
2205	C9	3227	A5	7305	A5
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2210	B8	3232	B6	9003	A3
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2212	C9	3234	C6	9010	B2
2214	A6	3237	B9	9012	C5
2215	B7	3238	C9	9013	B2
2216	C7	3300	A4	9016	C2
2217	B7	3301	A4	9025	A1
2218	B8	3302	A4	9200	B6
2219	C8	3303	B4	9201	B8
2220	C9	3304	C5	9202	B8
2221	C9	3305	C5	9203	C6
2222	A7	3306	C4	9204	C6
2223	B7	3307	C4	9205	B5
2224	A6	3308	B4	9207	B6
2225	A6	3309	C4	9208	B6
2226	A7	3314	B3	9209	B9
2227	C7	3315	A5	9300	B5
2228	B6	3316	B4	9301	A4
2229	A6	3317	A4	9302	A3
2230	B6	3318	B4	9304	A5
2231	B6	3319	B4		
2232	A6	3320	B4		
2233	A6	3321	B4		
2234	B5	3322	B4		
2235	C8	3323	B4		
2236	B5	3324	B4		
2237	C9	3326	B3		
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2306	C4	3335	A4		
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2311	C4	4003	C1		
2312	B3	4008	A1		
2313	B5	4017	B3		
2318	A5	4020	A3		
2319	A5	4022	C1		
2320	B4	4023	A1		
2321	A4	4030	C3		
2322	B4	4031	A1		
2323	B4	4033	B3		
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2331	C4	4100	A3		
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2334	A5	4202	C9		
2335	A4	4203	A7		
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2340	A1	4205	A6		
2343	A5	4206	A6		
2344	A4	4301	B4		
2347	B5	4302	B5		
3001	B3	4303	A4		
3002	B3	4304	B3		
3006	B1	5000	C3		
3007	C1	5001	A2		
3008	B1	5002	A2		
3009	C2	5004	A3		
3010	C1	5200	B6		
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3012	A2	5300	C4		
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Stereo IF module



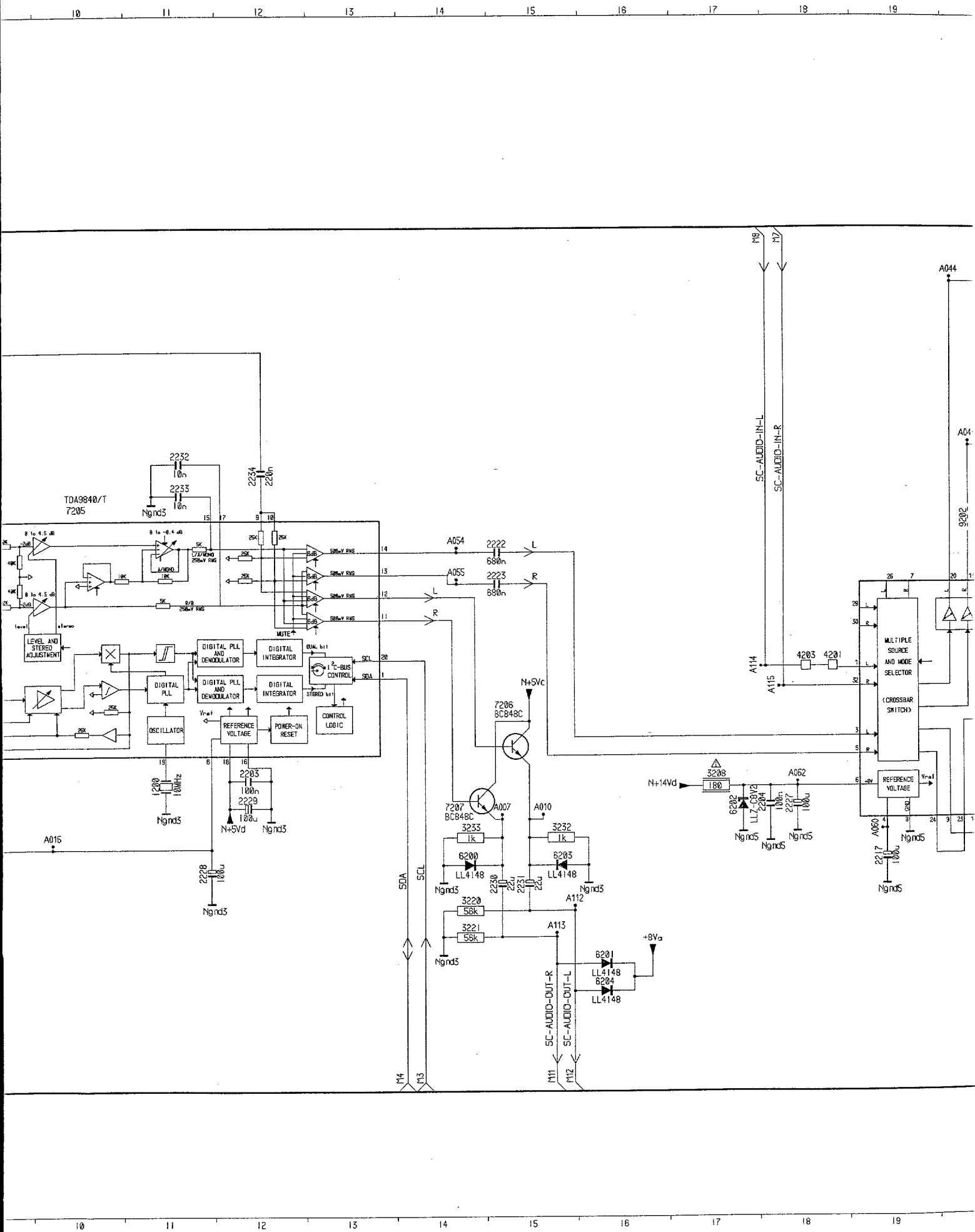
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1103 C4	3117 D4	9204 D6
1104 C3	3200 D7	9205 C5
1105 C3	3207 B5	9206 D8
1200 B6	3208 C7	9207 C6
2000 C4	3211 C7	9209 C8
2001 C4	3212 B7	G19 B7
2002 B3	3214 C7	G28 D6
2003 B2	3218 C7	G29 D2
2004 B4	3219 C7	
2005 C2	3220 C6	
2006 D1	3221 C6	
2007 B3	3222 D9	
2008 C3	3223 C9	
2009 B1	3224 D7	
2010 B1	3225 D7	
2011 B4	3226 A5	
2014 B4	3227 A5	
2015 D5	3228 B5	
2016 B4	3229 B5	
2017 B2	3230 C8	
2018 C4	3231 C8	
2019 D1	3232 C6	
2020 C4	3233 C6	
2100 B4	3237 C8	
2101 A4	3238 C9	
2102 B3	4000 B2	
2103 B3	4001 C1	
2106 D4	4002 C4	
2107 B4	4003 C1	
2108 D3	4006 D4	
2200 B5	4007 C4	
2201 C5	4008 D3	
2202 B5	4022 B1	
2203 B6	4023 A1	
2204 C8	4034 D2	
2205 D8	4041 A1	
2206 D8	4100 D4	
2207 D8	4101 D3	
2208 D8	4102 D4	
2209 C8	4103 D4	
2210 C8	4104 A4	
2211 B5	4200 D8	
2212 D8	4201 B7	
2214 B5	4202 D9	
2215 C7	4203 A5	
2216 D7	4204 B7	
2217 C7	4205 B5	
2218 C7	4207 D8	
2219 D8	4209 A5	
2220 D9	5000 D4	
2221 C9	5001 B3	
2222 B7	5002 B2	
2223 C6	5004 C4	
2224 B5	5100 C3	
2225 B5	5200 C5	
2226 B7	5201 C5	
2227 C7	6002 C1	
2228 C6	6003 C5	
2229 B6	6007 D5	
2230 C6	6100 D3	
2231 C6	6106 D4	
2232 B6	6107 D4	
2233 B6	6200 C6	
2234 C5	6201 D6	
2235 D7	6202 C7	
2237 D9	6203 C6	
2238 C9	6204 D6	
3000 C4	6206 D9	
3001 B4	6207 D9	
3002 B3	6208 C9	
3003 B4	6209 D9	
3004 B3	7001 C2	
3005 C4	7002 C1	
3006 C1	7003 D1	
3007 C1	7004 B3	
3008 D1	7005 B1	
3009 C1	7006 A1	
3010 C1	7007 C1	
3011 C2	7008 D5	
3012 B2	7009 D2	
3013 B3	7102 C4	
3014 A3	7103 D4	
3015 A3	7104 C3	
3016 B2	7201 D7	
3018 B1	7202 D9	
3019 A1	7203 D9	
3020 A1	7204 C8	
3021 B1	7205 B6	
3022 B1	7206 C6	
3023 D3	7207 C6	
3024 B4	7208 C9	
3025 C2	7209 C9	
3026 D6	9000 B4	
3027 D6	9001 B2	
3029 C2	9002 B3	
3030 C2	9003 C2	
3031 B2	9004 A5	
3032 D2	9005 D2	
3034 D2	9006 B1	
3035 D1	9007 C3	
3098 D3	9008 B2	
3100 A2	9009 D6	
3101 B3	9010 B2	
3102 B2	9011 C3	
3103 C3	9012 D5	
3104 C2	9013 A4	
3106 C4	9014 D5	
3107 C4	9015 D3	
3108 B3	9016 D3	



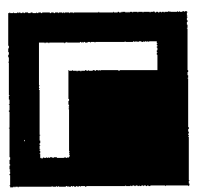
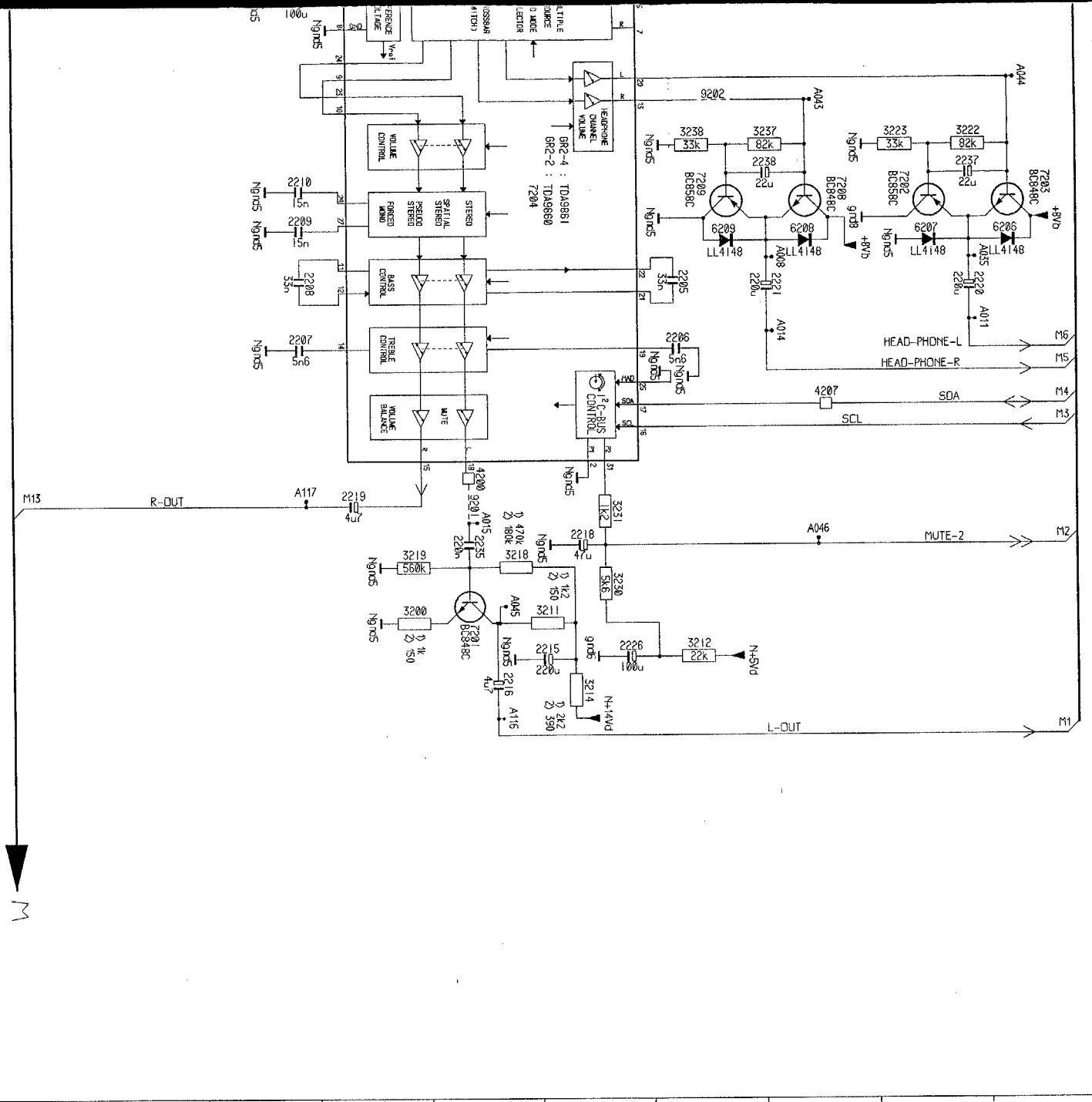
- 1) : IN GR2-4 ONLY
- 2) : IN GR2-2 ONLY



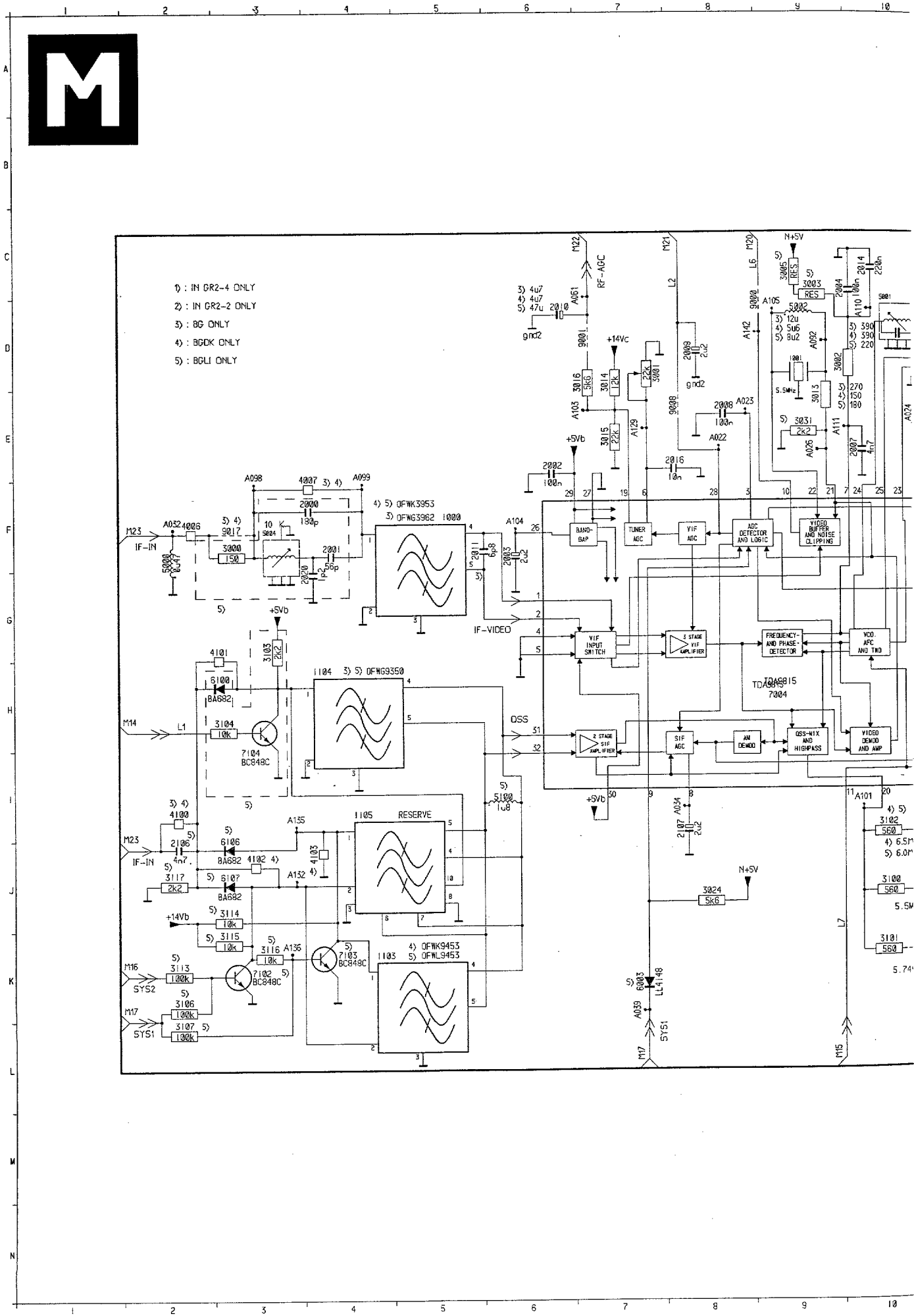
# Module FI-Son Stereo

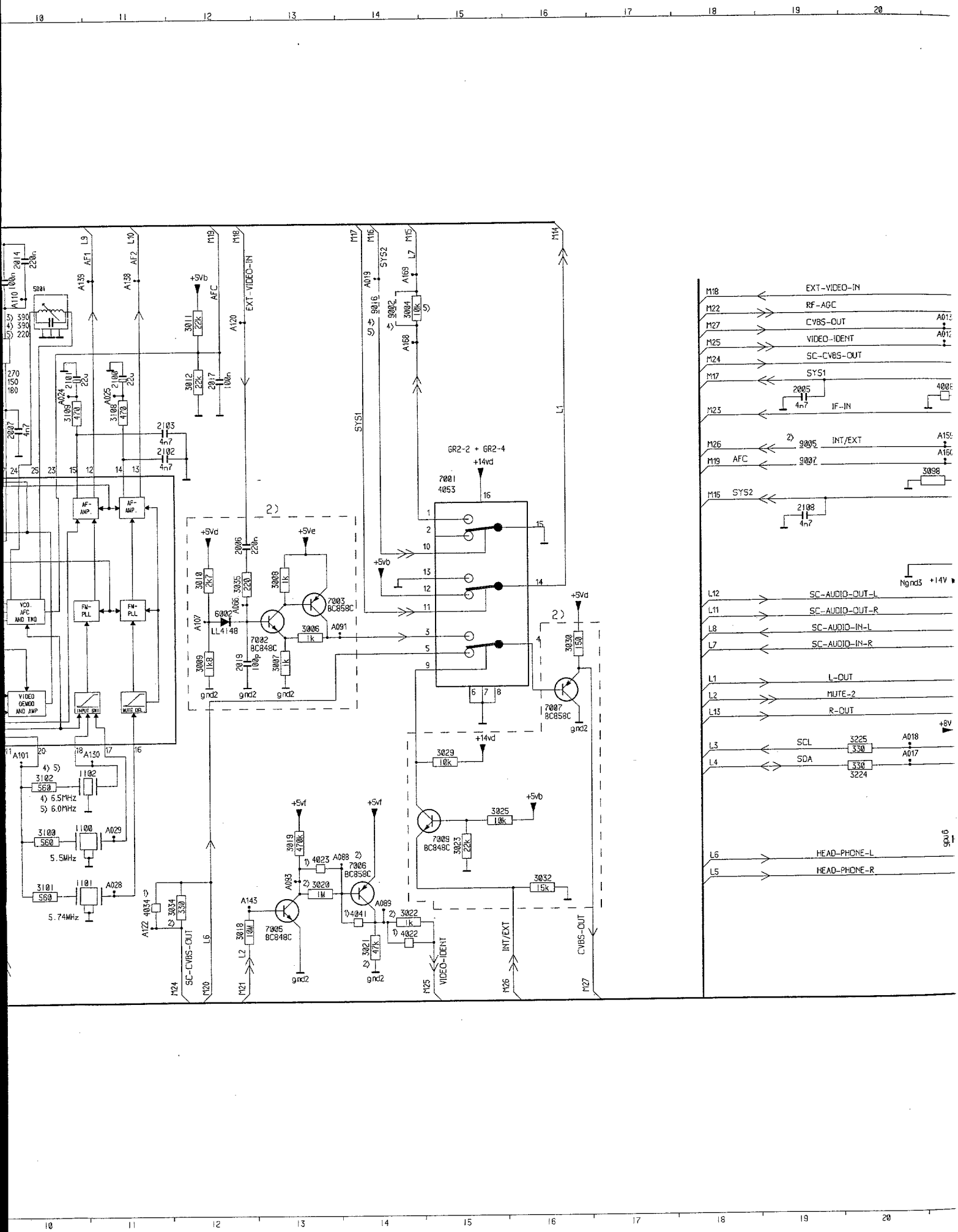


1200	L200	G 7	H 3	I 9	J 5	K 1	L 7	M 3	N 9
1199	L201	H 1	I 7	J 3	K 9	L 5	M 1	N 7	
1198	L202	I 3	J 9	K 5	L 1	M 7	N 3		
1197	L203	J 5	K 1	L 7	M 3	N 9			
1196	L204	K 1	L 7	M 3	N 9				
1195	L205	L 3	M 9	N 5					
1194	L206	M 5	N 1						
1193	L207	N 7							
1192	L208								
1191	L209								
1190	L210								
1189	L211								
1188	L212								
1187	L213								
1186	L214								
1185	L215								
1184	L216								
1183	L217								
1182	L218								
1181	L219								
1180	L220								
1179	L221								
1178	L222								
1177	L223								
1176	L224								
1175	L225								
1174	L226								
1173	L227								
1172	L228								
1171	L229								
1170	L230								
1169	L231								
1168	L232								
1167	L233								
1166	L234								
1165	L235								
1164	L236								
1163	L237								
1162	L238								
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1147	L253								
1146	L254								
1145	L255								
1144	L256								
1143	L257								
1142	L258								
1141	L259								
1140	L260								
1139	L261								
1138	L262								
1137	L263								
1136	L264								
1135	L265								
1134	L266								
1133	L267								
1132	L268								
1131	L269								
1130	L270								
1129	L271								
1128	L272								
1127	L273								
1126	L274								
1125	L275								
1124	L276								
1123	L277								
1122	L278								
1121	L279								
1120	L280								



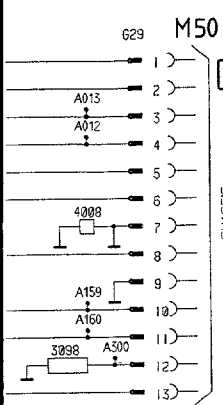
# Stereo IF-Sound module/Stereo ZF-Ton module



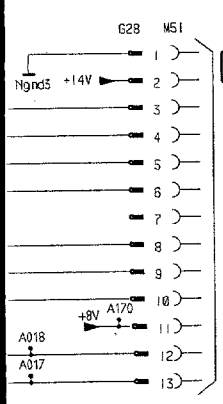
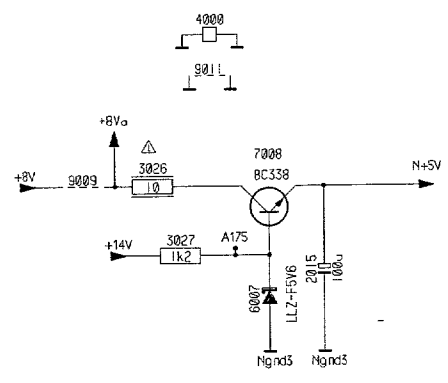




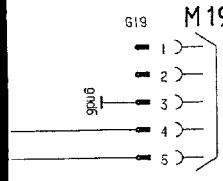
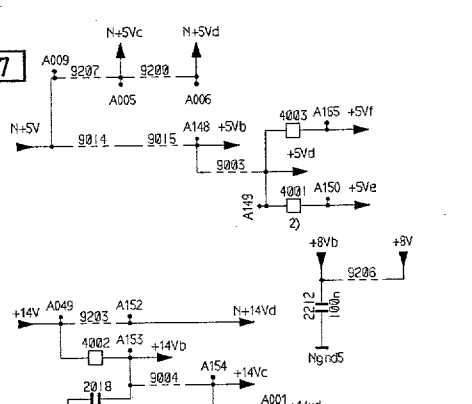
21 22 23 24 25 26 27 28



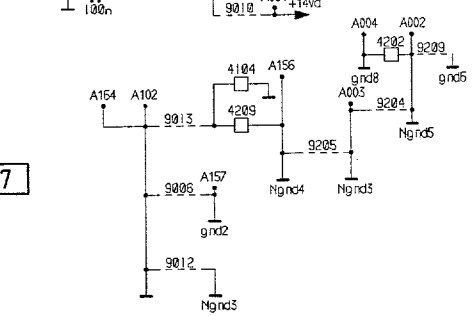
B P7



B P7

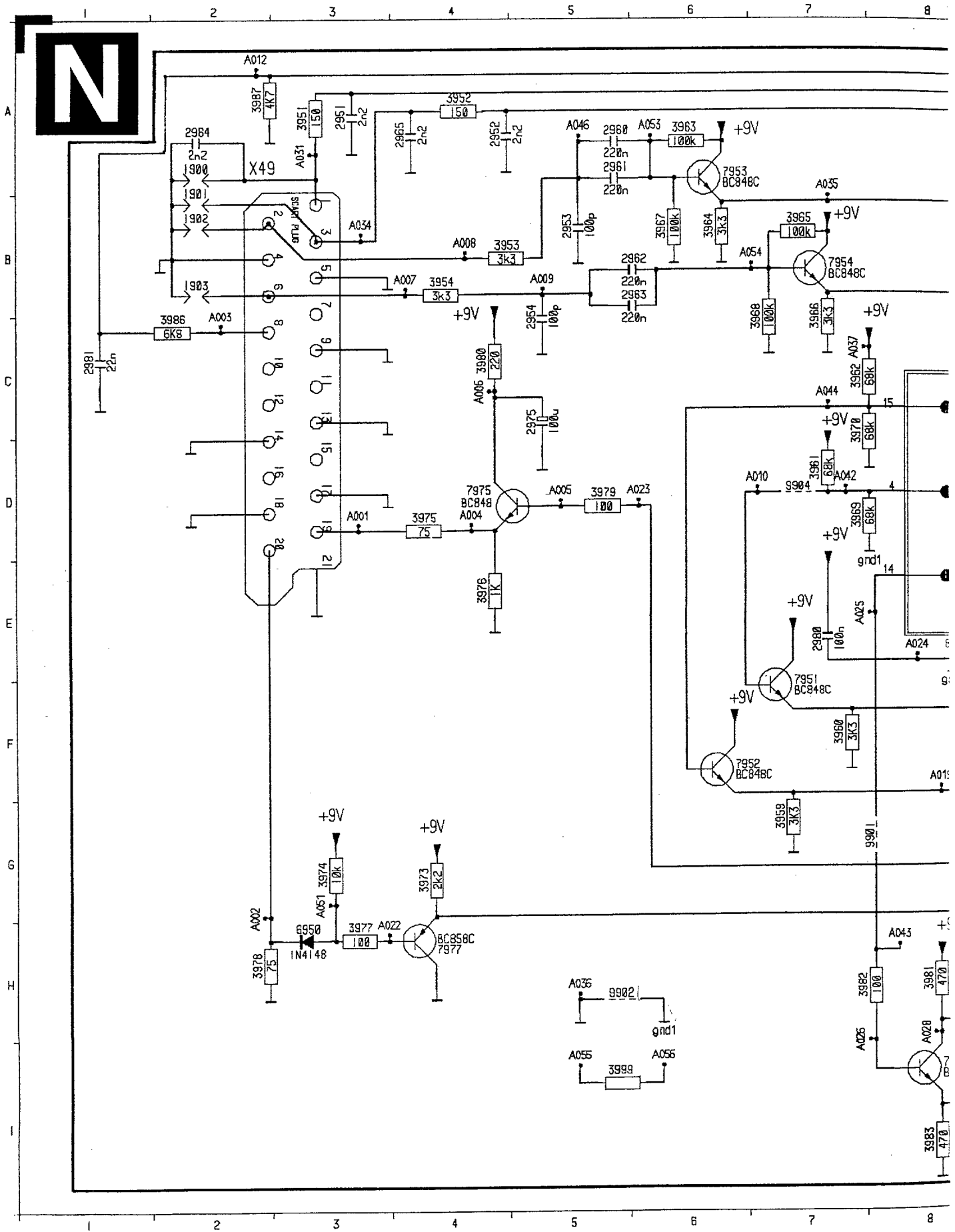


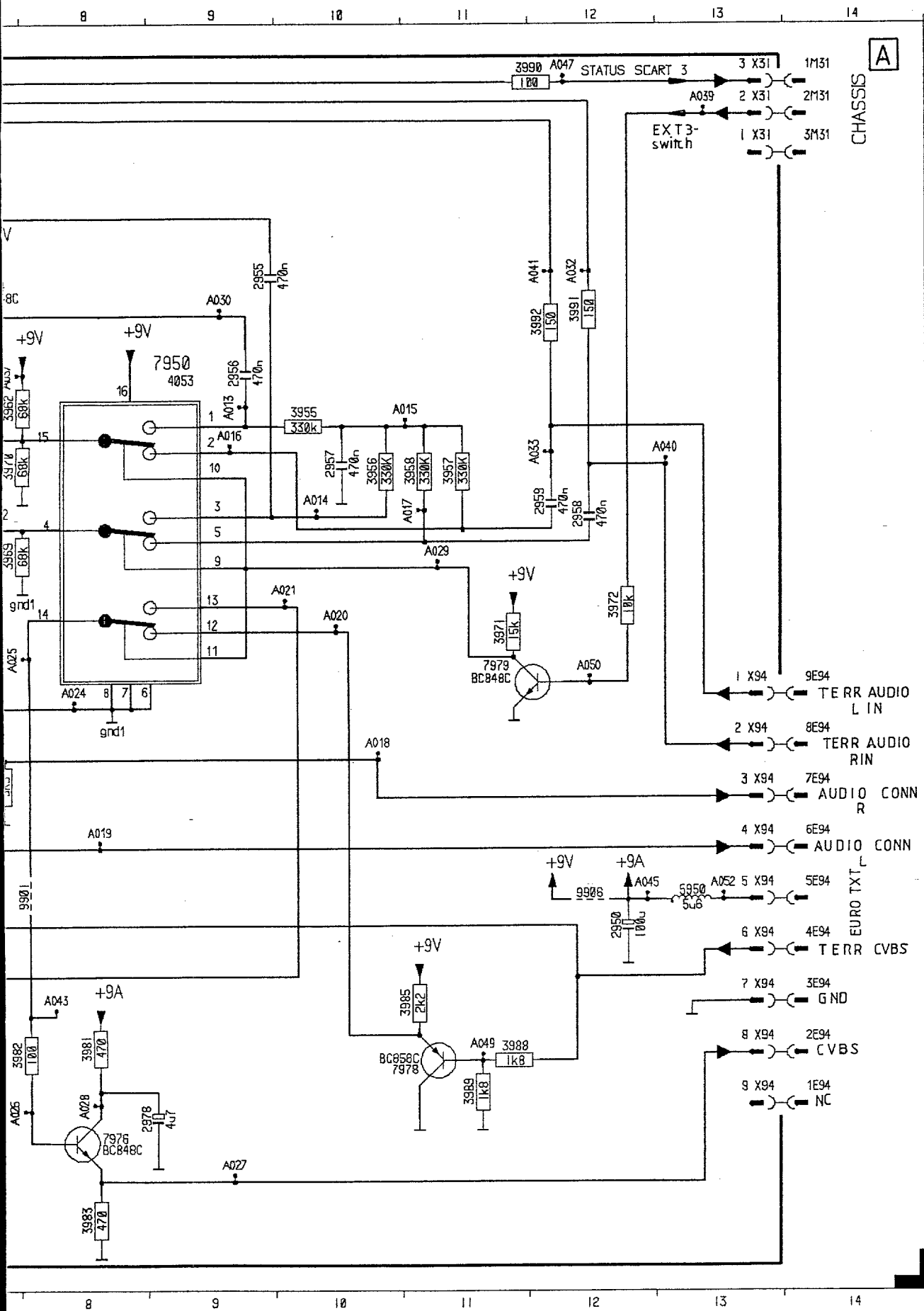
B P7



1000	F 5	A001	I24
1001	D 9	A002	J25
1100	J10	A003	K26
1101	K10	A004	L25
1102	I10	A005	M23
1103	K 4	A006	N24
1104	H 4	A009	O23
1105	I 4	A012	P24
2000	F 4	A013	Q21
2001	F 4	A017	R20
2002	E 6	A018	S20
2003	F 6	A019	T14
2004	C 9	A022	U18
2005	E 9	A023	V18
2006	G12	A024	W10
2007	E10	A025	X11
2008	E 8	A026	Y 9
2009	D 8	A028	Z11
2010	D 8	A029	AA 2
2011	F 6	A032	AB 2
2014	C10	A034	AC 8
2015	E25	A039	AD 7
2016	E18	A049	AE 123
2017	E22	A051	AF 7
2018	I23	A056	AG12
2019	H12	A058	AH13
2020	G 4	A059	AI14
2100	E11	A091	AJ 8
2101	E10	A092	AK 9
2102	E11	A093	AL 8
2103	E11	A098	AM 3
2106	J 2	A099	AN 4
2107	I 8	A101	AO10
2108	F19	A102	AP13
3012	I24	A103	AQ16
3000	F 3	A104	AR 6
3001	D 7	A105	AS 9
3002	D 9	A107	AT10
3003	C 9	A110	AU10
3004	D14	A111	AV10
3005	C 9	A120	AW12
3006	H13	A122	AX11
3007	H13	A129	AY 7
3008	G13	A130	AZ 11
3009	H10	A132	BA 3
3010	G10	A135	BB 3
3011	D12	A136	BC 3
3012	E12	A138	BD11
3013	E 9	A139	BE10
3014	D 7	A142	BF10
3015	E 7	A143	BG10
3016	D 7	A146	BH24
3018	K12	A149	BI24
3019	J13	A150	BJ25
3020	K13	A152	BK23
3021	K14	A153	BL23
3022	K14	A154	BM24
3023	J15	A156	BN24
3024	J 8	A157	BO24
3025	J15	A159	BP24
3026	E23	A160	BQ21
3027	E24	A164	BR23
3029	I15	A165	BS25
3030	H16	A168	BT14
3031	E 9	A169	BU14
3032	K16	A170	BV12
3034	K12	A175	BW24
3035	G12	A300	BX21
3036	F21	G19	BY21
3100	J10	G19	BZ12
3101	K10	G19	CA11
3102	I10	G19	CB11
3103	G 3	G19	CC11
3104	H 3	G28	CD11
3106	K 2	G28	CE12
3107	L 2	G28	CF11
3108	E11	G28	CG11
3109	E10	G28	CH11
3113	K 2	G28	CI11
3114	K 3	G28	CJ11
3115	K 3	G28	CK11
3116	K 3	G28	CL11
3117	J 2	G28	CM11
3224	I20	G28	CN11
3225	I20	G28	CO11
4000	D24	G29	CP11
4001	H24	G29	CQ11
4002	I23	G29	CR11
4003	G24	G29	CS11
4006	F 2	G29	CT11
4007	F 4	G29	CU11
4008	E21	G29	CV11
4022	K14	G29	CW11
4023	J13	G29	CX11
4034	K11	G29	CY11
4041	K14	G29	CZ11
4100	I 2	G29	DA11
4101	G 3	G29	DB11
4102	J 3	G29	DC11
4103	J 4	G29	DD11
4104	J24	G29	DE11
4202	J25	G29	DF11
4203	J24	G29	DG11
5000	F 2	G29	DH11
5001	D10	G29	DI11
5002	D 9	G29	DJ11
5004	F 3	G29	DK11
5100	F 6	G29	DL11
6002	G12	G29	DM11
6003	K 7	G29	DN11
6007	F24	G29	DO11
6100	H 3	G29	DP11
6106	H 3	G29	DQ11
6107	J 3	G29	DR11
7001	F15	G29	DS11
7002	H12	G29	DT11
7003	G13	G29	DU11
7004	H 9	G29	DV11
7005	K13	G29	DW11
7006	J14	G29	DX11
7007	I16	G29	DY11
7008	E24	G29	DZ11
7009	J15	G29	EA11
7102	K 3	G29	EB11
7103	K 4	G29	EC11
7104	K 4	G29	ED11
8000	D 9	G29	EE11
9001	D 7	G29	EF11
9002	D14	G29	EG11
9003	H24	G29	EH11
9004	E19	G29	EI11
9005	E19	G29	EJ11
9006	K23	G29	EK11
9007	F19	G29	EL11
9008	E 8	G29	EM11
9009	E23	G29	EN11
9010	J24	G29	EO11
9011	D24	G29	EP11
9012	K23	G29	EQ11
9013	J23	G29	ER11
9014	H23	G29	ES11
9015	H23	G29	ET11
9016	D14	G29	EU11
9017	F 3	G29	EV11
9200	G23	G29	EW11
9203	I23	G29	EX11
9204	J23	G29	EY11
9205	K24	G29	EZ11
9206	I25	G29	FA11
9207	G23	G29	FB11
9209	J25	G29	FC11

21 22 23 24 25 26 27 28





1980	A	2	A025	E	7
1981	B	3	A026	F	8
1982	C	4	A027	G	9
1983	D	5	A028	H	0
1984	E	6	A029	I	1
1985	F	7	A030	J	2
1986	G	8	A031	K	3
1987	H	9	A032	L	4
1988	I	0	A033	M	5
1989	J	1	A034	N	6
1990	K	2	A035	O	7
1991	L	3	A036	P	8
1992	M	4	A037	Q	9
1993	N	5	A038	R	0
1994	O	6	A039	S	1
1995	P	7	A040	T	2
1996	Q	8	A041	U	3
1997	R	9	A042	V	4
1998	S	0	A043	W	5
1999	T	1	A044	X	6
2000	U	2	A045	Y	7
2001	V	3	A046	Z	8
2002	W	4	A047	AA	9
2003	X	5	A048	AB	0
2004	Y	6	A049	AC	1
2005	Z	7	A050	AD	2
2006	AA	8	A051	AE	3
2007	AB	9	A052	AF	4
2008	AC	0	A053	AG	5
2009	AD	1	A054	AH	6
2010	AE	2	A055	AI	7
2011	AF	3	A056	AJ	8
2012	AG	4	A057	AK	9
2013	AH	5	A058	AL	0
2014	AI	6	A059	AM	1
2015	AJ	7	A060	AN	2
2016	AK	8	A061	AO	3
2017	AL	9	A062	AP	4
2018	AM	0	A063	AQ	5
2019	AN	1	A064	AR	6
2020	AO	2	A065	AS	7
2021	AP	3	A066	AT	8
2022	AQ	4	A067	AU	9
2023	AR	5	A068	AV	0
2024	AS	6	A069	AW	1

## 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 $\Omega$ ; 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

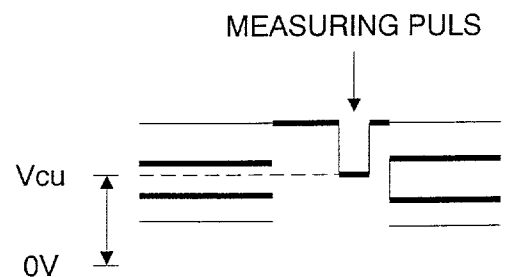
### 1.14 Cut-off points of the picture tube

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.



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290694

Fig. 7.2



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

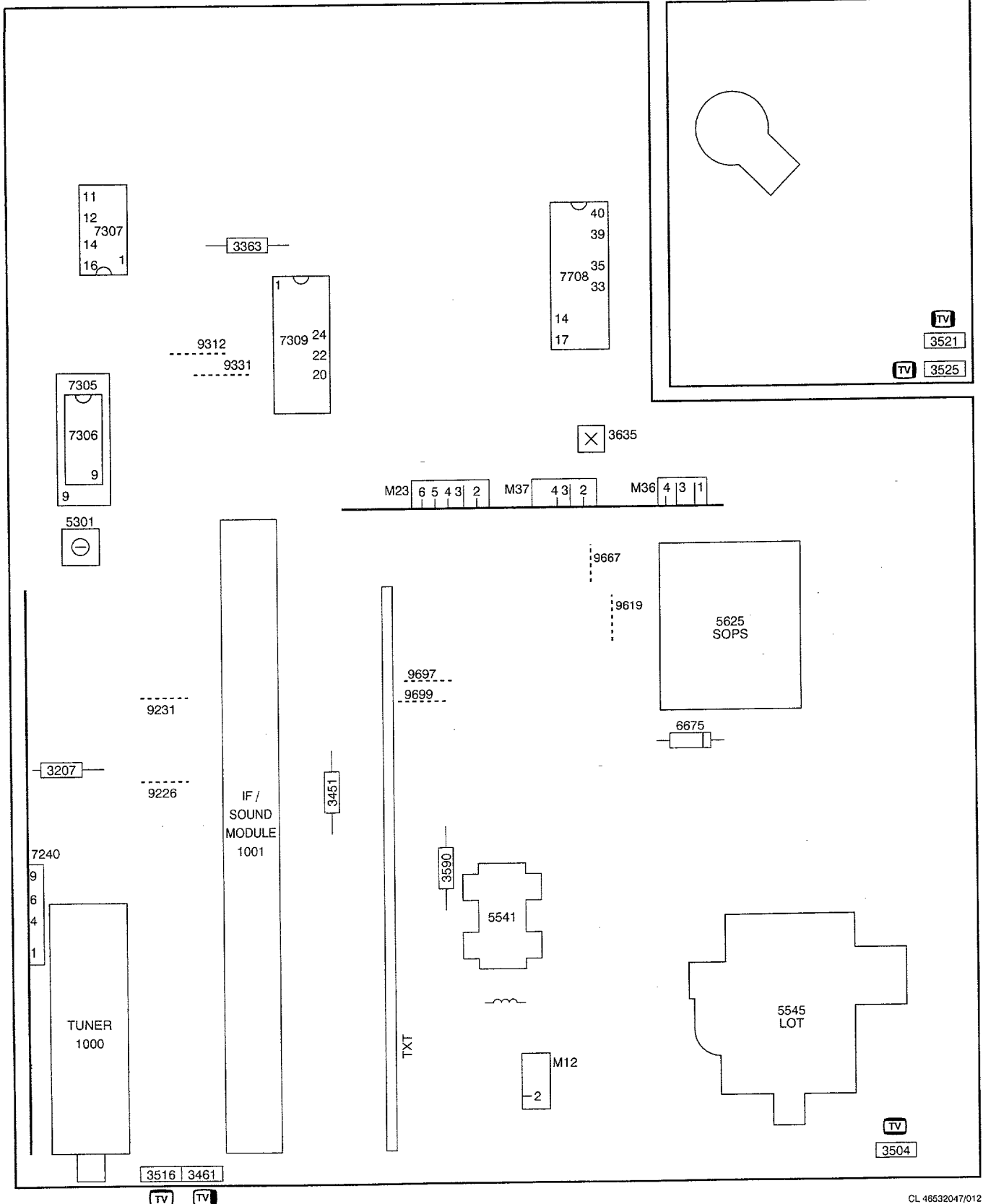
The last five errors will be remembered in the non volatile memory (if possible), this is called the error buffer. After a startup of the system (on by main switch or on from standby) only one error will be added to the buffer (first in, first out procedure), only errors different from the last error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



## 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:

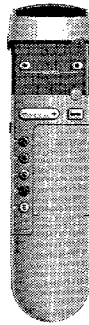
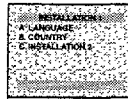
If a multi-system set is nevertheless to be used with the PAL BG system in the service default mode, the option "MULTI" can be temporarily switched off ("OFF").

#### 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

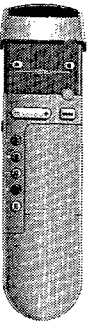
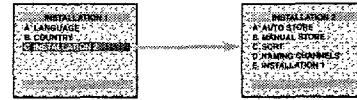
- This menu enables you to tune in the channels on the TV set.
- Open the flap on the remote control.
- Press both the **⏏** and **⏏** keys at the same time.
- The **INSTALLATION 1** menu appears on the screen.



## 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.

## 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.



## 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.



## 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**.



### 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**.



#### 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 d

#### Storing

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



### 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.



### 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:

- o Press the blue key **Ⓚ**.
- ▶ The **NAMING CHANNELS** menu appears.

### step a Programme number

- o Press the red key **Ⓛ**.
- ▶ The programme number is displayed at the bottom of the screen.
- o Use the **←** key or the keys numbered **①** to **⑤** 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:

- o Press the green key **Ⓜ**.
- ▶ The lower bar of the menu is displayed in green.
- o 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

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

### step d Next position

When the desired character has been chosen:

- o Press the blue key **Ⓚ** to enable the cursor to be moved.
- ▶ Use the **←** key to move the cursor to the left or to the right.
- o Press the yellow key **Ⓝ** 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:**

- o Press the **Ⓚ** key.
- ▶ The **INSTALLATION 2** menu reappears.

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

- o Press the **Ⓚ** key again.

## Special features

Starting from the **MAIN MENU**:

- o Press the yellow key **Ⓝ**.
- ▶ 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:

- o Press the red key **Ⓛ**.
- ▶ The indication **OFF** is displayed at the bottom of the screen.
- o 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:**

- o Press the **Ⓚ** key on the front of the TV set to switch off the set.
- o Press the **Ⓚ** key again to switch on.
- ▶ The TV set remains in standby (the red indicator lights up).
- o 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:**

- o 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:

- o Press the green key **Ⓜ**.
- ▶ The indication **00** is displayed at the bottom of the screen.
- o Press the **←** key to program the duration.
- ▶ Each time you press the key, the duration increases by 15 minutes (up to 90 minutes).
- o Press the **Ⓚ** 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:**

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

**To cancel the programmed switching off:**

- o 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:

- o Press the yellow key **Ⓝ**.
- ▶ The indication **OFF** appears at the bottom of the screen.
- o 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:**

- o Press the **Ⓚ** key.

## Calling up the main menu

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

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

The coloured keys **Ⓛ**, **Ⓝ**, **Ⓜ** and **Ⓚ** allow access to the various choices within the menus. The **←** key enables you to make the adjustments.

**To call up the MAIN MENU:**

- o Press the **Ⓚ** key on the remote control.
- ▶ The **MAIN MENU** appears on the screen.



## Adjusting the picture

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

- o Press the red key **Ⓛ**.
- ▶ The **PICTURE** menu appears on the screen.

### Brightness, colour, contrast, sharpness

- o Press the coloured key **Ⓛ**, **Ⓝ**, **Ⓜ** or **Ⓚ** corresponding to the adjustment which you want to modify.
- ▶ A horizontal scale appears at the bottom of the screen.
- o Press the **←** key to make the adjustment.
- ▶ The cursor moves according to your adjustment.
- o 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.

- o Press the white key **Ⓚ**.
- ▶ A horizontal scale appears at the bottom of the screen.
- o 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**

- o Press the **Ⓚ** key.
- ▶ The **MAIN MENU** reappears, move on to "Adjusting the sound".
- o To exit from the **MAIN MENU** press the **Ⓚ** 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.

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

**To display the next page:**

- o Press the red key **Ⓛ**.

**To display the previous page:**

- o Press the green key **Ⓜ**.

## Screen size

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

- o Press the **Ⓚ** key.
- ▶ The **MAIN MENU** appears on the screen.
- o Press the white key **Ⓚ**.
- ▶ The indication **NORMAL** is displayed at the bottom of the screen.
- o 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

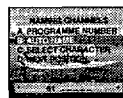
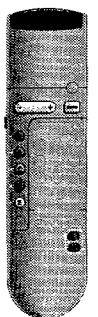
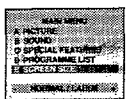
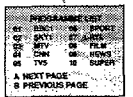
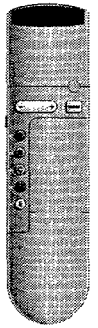
The remote control has two blue programmable keys **Ⓜ** and **Ⓚ**. If you regularly use certain adjustments within the menus (for example the spatial effect, headphone volume, brightness...) it is possible to program direct access to one of these adjustments.

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

**To check the function:**

- o Press the blue keys **Ⓜ** and **Ⓚ**.
- ▶ 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.











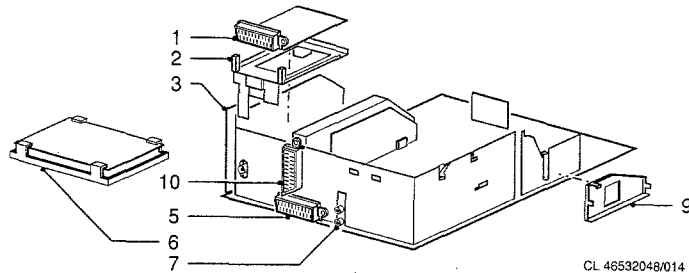
3966	4822 051 20332	3k3 5% 0.1W
3967	4822 051 20104	100k 5% 0.1W
3968	4822 051 20104	100k 5% 0.1W
3969	4822 051 20683	68k 5% 0.1W
3970	4822 051 20683	68k 5% 0.1W
3971	4822 051 20153	15k 5% 0.1W
3972▲	4822 116 52233	10k 5% 0.5W
3973	4822 051 20222	2k2 5% 0.1W
3974	4822 116 80173	10k 5% 0.5W
3975	4822 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
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7977	4822 130 42513	BC858C
7978	4822 130 42513	BC858C
7979	5322 130 42136	BC848C



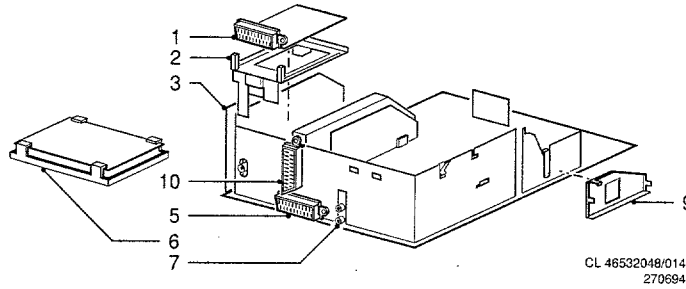
CL 46532048/014  
270694

### Mechanical parts list

1	4822 267 60366	Third scart euroconnector
2	4822 404 31322	3 <sup>rd</sup> 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
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3970	4822 051 20683	68k 5% 0.1W
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3972	4822 116 52233	10k 5% 0.5W
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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

1 4822 267 60366 Third scart  
euroconnector  
2 4822 404 31322 3<sup>rd</sup> 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