

Service
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RTV servis Horvat

Kešinci, 31402 Semeljci

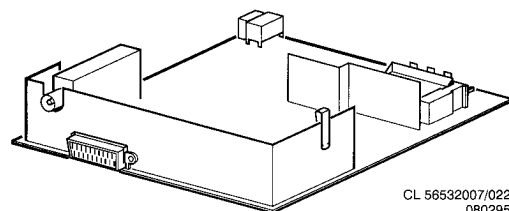
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Service Manual



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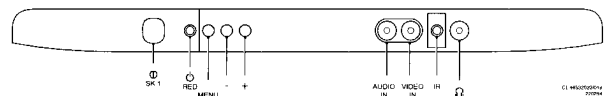
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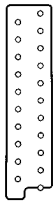

1. Technical specifications

Mains voltage	: 220 - 240 V \pm 10% AC; 50 Hz (\pm 5%)
Power cons. at 220V~	: 14" 43 W (stand-by \leq 6 W) : 15" 45 W (stand-by \leq 6 W) : 17" 45 W (stand-by \leq 6 W) : 20" 52 W (stand-by \leq 6 W) : 21" 63 W (stand-by \leq 6 W)
Aerial input impedance TV	: 75 Ω - coax
Min. aerial input VHF	: 30 μ V
Min. aerial input UHF	: 40 μ V
Max. aerial input VHF/UHF	: 180mV
Pull-in range colour sync	: \pm 300Hz
Pull-in range horizontal sync	: \pm 600Hz
Pull-in range vertical sync	: \pm 5Hz
Picture tube range	: 14", 15", 17", 20", 21"
	: 1 W mono execution: 4" full range round 25 Ω 2W : 3 W mono execution: 4" woofer round 16 Ω 3W : 2" tweeter round 16 Ω 3W
TV Systems	: PAL BG : PAL I : PAL BG / SECAM BGDK : PAL BGI / SECAM BGLL'
Indications	: On Screen Display (OSD) green : 1 LED (red high intensity, red low intensity, "RC5" and blinking red at error code)
VCR programs	: 0 (SVHS optional)
Tuning and operating system	:  VST / PLL
UV913 / IEC (VST)	: VHFa: 46 - 102 MHz : VHFb: 138 - 224 MHz : UHF: 471 - 855 MHz
UV915E / IEC (VST)	: VHFa: 48 - 118 MHz : VHFb: 118 - 300 MHz : Hyper: 300 - 470 MHz : UHF: 470 - 861 MHz
UV916E / IEC (PLL)	: VHFa: 48 - 118 MHz : VHFb: 118 - 300 MHz : Hyper: 300 - 470 MHz : UHF: 470 - 861 MHz
UV917E / IEC (VST)	: VHFa: 48 - 118 MHz : VHFb: 118 - 300 MHz : UHF: 470 - 861 MHz
U943 / IEC (VST)	: UHF: 470 - 861 MHz
U944 / IEC (PLL)	: UHF: 470 - 861 MHz
Local operating functions	: MENU / - / +





2. Connection facilities

Euroconnector:

	1 - Audio \rightarrow R (0V5 RMS \leq 1k Ω)
	2 - Audio \rightarrow R (0V2 - 2V RMS \geq 10k Ω)
	3 - Audio \rightarrow L (0V5 RMS \leq 1k Ω)
	4 - Audio \perp
	5 - Blue \perp
	6 - Audio \rightarrow L (0V2 - 2V RMS \geq 10k Ω)
	7 - Blue (0V7 _{pp} /75 Ω)
	8 - CVBS-status 1 \rightarrow (0-2V int., 10-12V ext.)
	9 - Green \perp
	10 - -
	11 - Green (0V7 _{pp} /75 Ω)
	12 - -
	13 - Red \perp
	14 - -

15 -	Red (0V7 _{pp} /75 Ω)
16 -	RGB-status (0-0V4 int.)(1-3V ext. 75 Ω)
17 -	CVBS \perp
18 -	CVBS \perp
19 -	CVBS \rightarrow (1V _{pp} /75 Ω)
20 -	CVBS \rightarrow (1V _{pp} /75 Ω)
21 -	Earthscreens

CINCH:

	CINCH Audio \rightarrow (0V2 _{eff} - 2 V _{eff} \geq 10k Ω)
	CINCH CVBS \rightarrow (1V _{pp} /75 Ω)

Head phone:

 8 - 600 Ω /15mW


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3. Safety instructions, Maintenance instructions, Warnings and notes

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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.

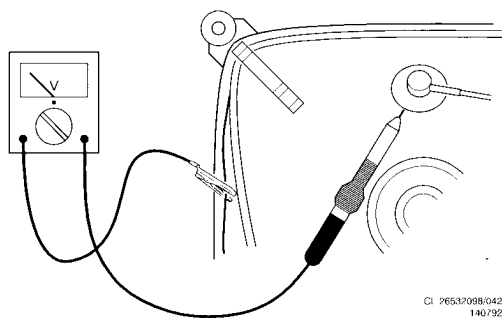





Fig. 3.1

Warnings

1. In order to prevent damage to IC's and transistors any flash-over of the EHT should be avoided. To prevent damage to the picture tube the method, indicated in Fig. 3.1, has to be applied to discharge the picture tube. Make use of an EHT probe and a universal meter (position DC-V). Discharge until the reading of the meter is 0V (after approx 30s).
2. **ESD** 
All IC's and many other semi-conductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools on the same potential.
3. Proceed with care when testing the EHT section and the picture tube.
4. Never replace any modules or any other parts while the set is switched on.
5. Use plastic instead of metal alignment tools. This will prevent any short circuits and the danger of a circuit becoming unstable.
6. Upon a repair of a transistor or an IC assembly (e.g. a transistor or IC with heatsink and spring) remounting should be carried out in the following order:
 1. Mount transistor or IC on heatsink with spring.
 2. Resolder the joints.

Notes

1. Do not use heatsinks as earth reference.
2. The direct voltages and waveforms should be measured relative to the nearest earthing point on the printed circuit board.
3. The direct voltages and waveforms are measured in the Service Default Mode (see chapter 8). Use a colour bar pattern of a pattern generator (e.g. PM5518)
4. The DC voltages and oscillograms are where necessary measured with  and without  aerial signal (settings as in Service Default Mode; see chapter 8). Voltages and oscillograms in the power supply section have been measured for both normal operation (⊕) and in the stand-by mode (⊖). As an input signal a colour bar pattern has been used.
5. The picture tube PWB has printed spark gaps. each spark gap is connected between an electrode of the picture tube and the Aguadag coating.

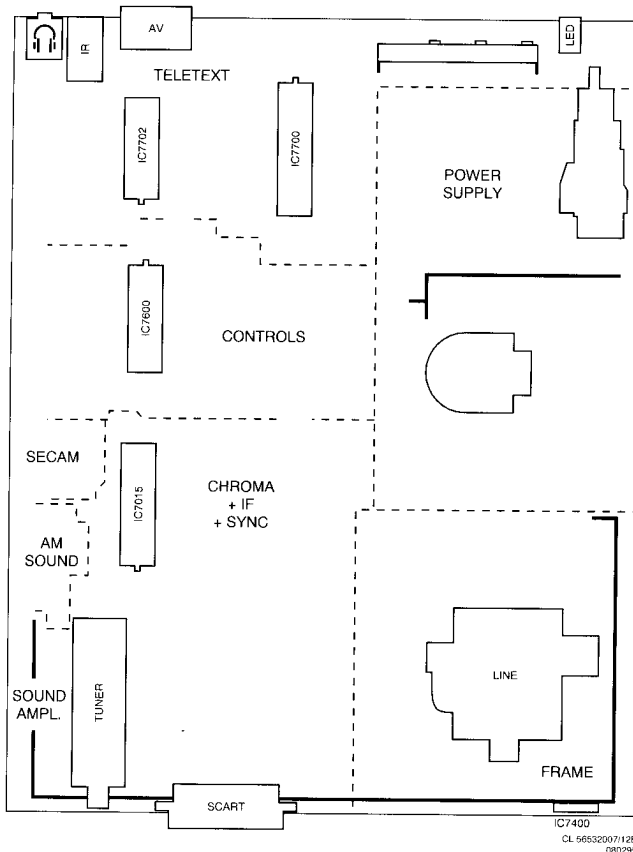
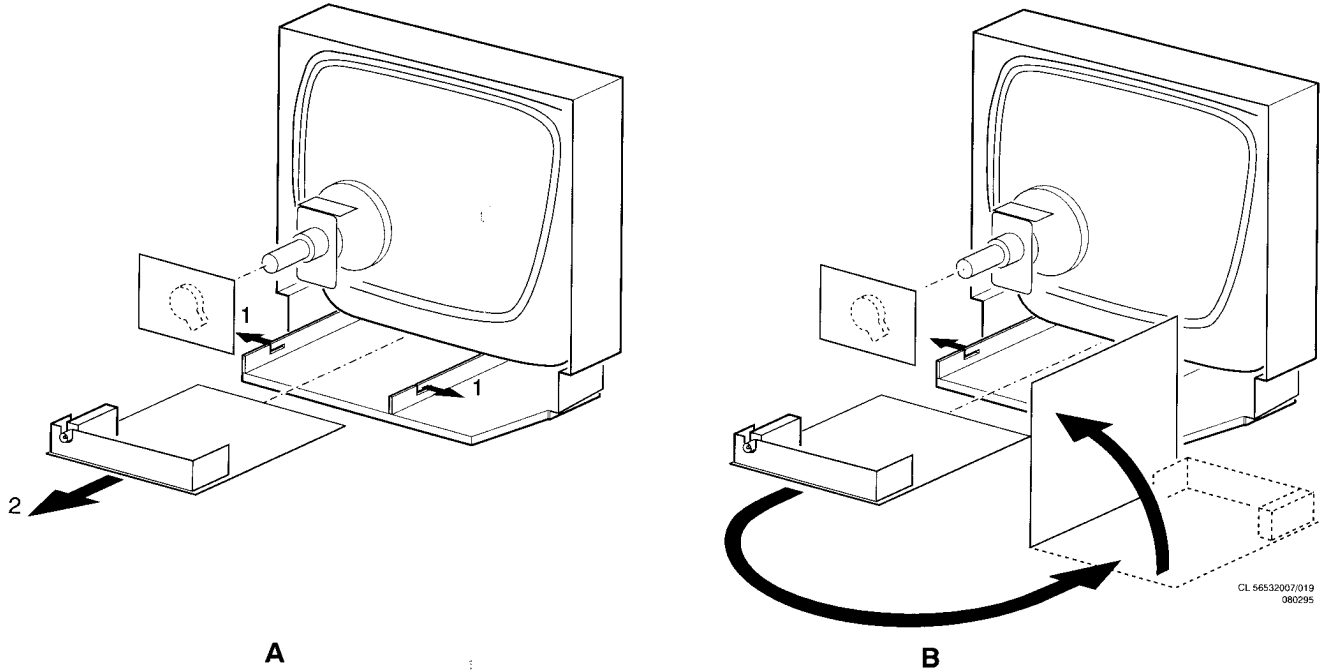
4. Mechanical instructions

For the main carrier two service positions are possible:

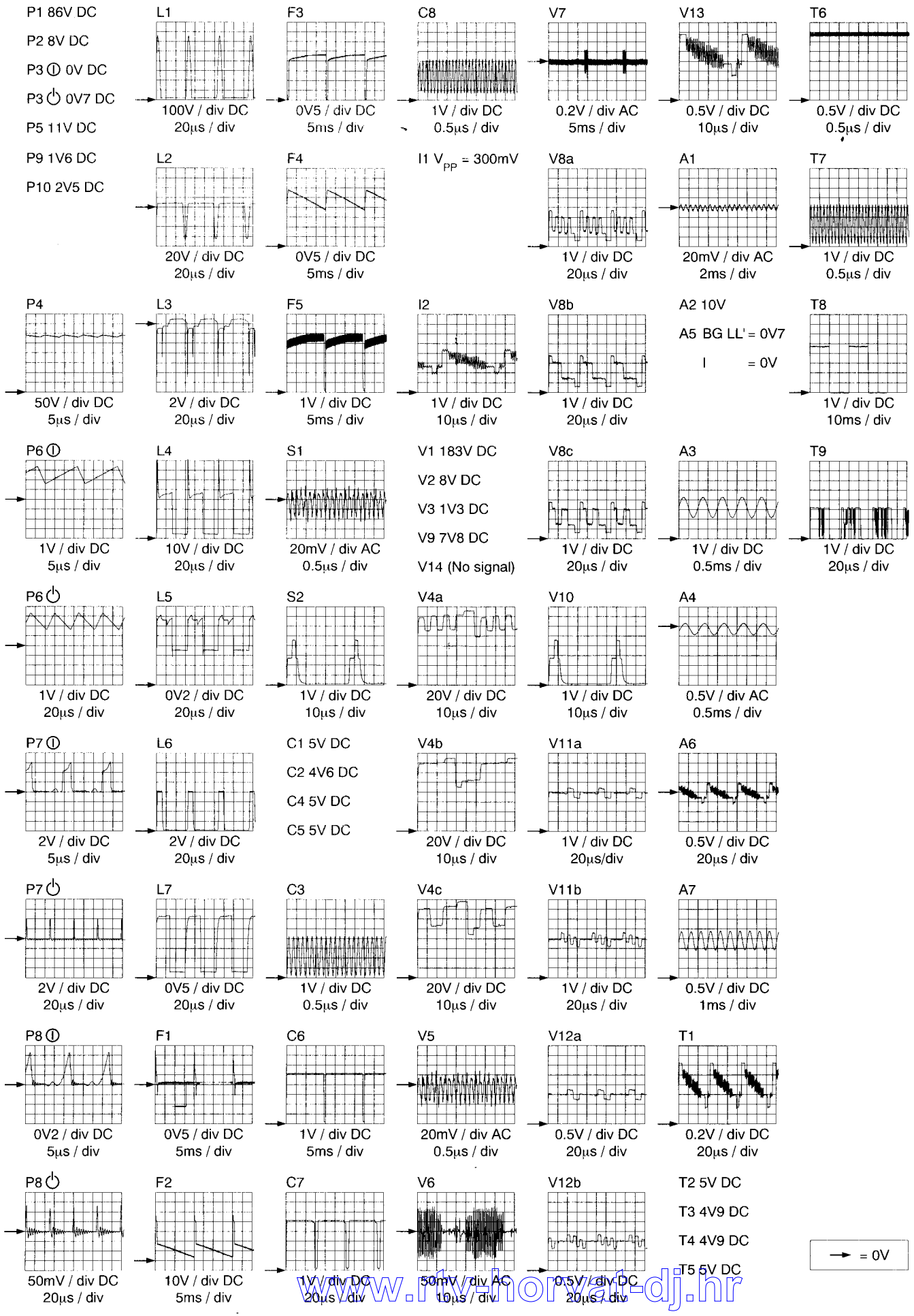
- A: For faultfinding on the component side of the main carrier
- B: For (de)soldering activities on the copper side of the main carrier

Position A can be reached by first removing the mains cord from it's fixation, then loosen the carrier lips (1) and then pulling the carrier panel (2) for approximately 10 cm.

Position B can be reached from position A after disconnecting the degaussing cable. Put the carrier on the line transformer side.



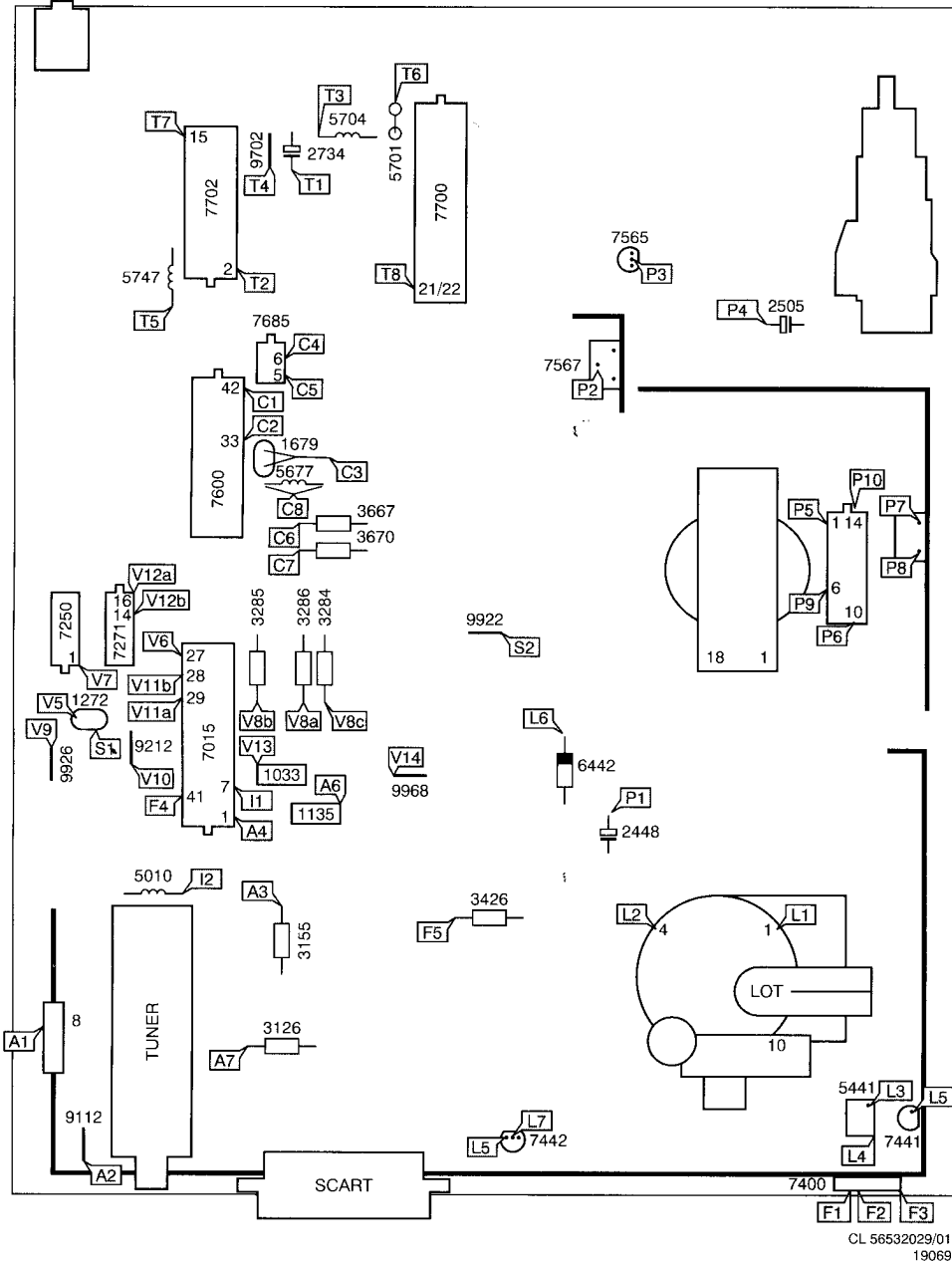
5. Overview oscillograms / Übersicht Oszillogramme / Vue d'ensemble des oscillogrammes



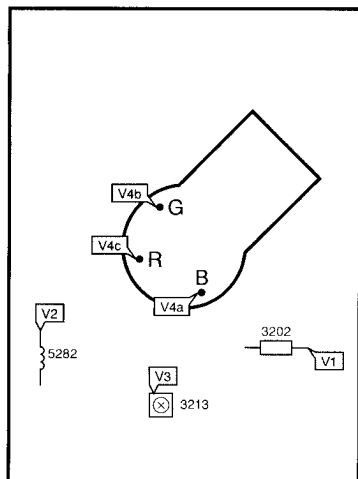
Survey of testpoints / Übersicht über die Teststellen / Presentation des points à tester

BI

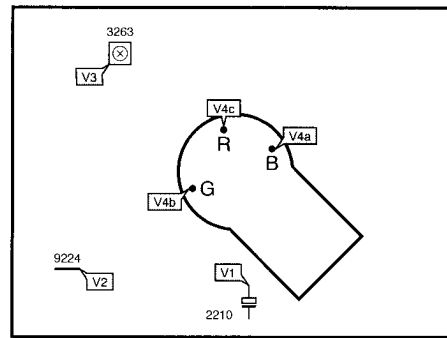
Main carrier (Component side)



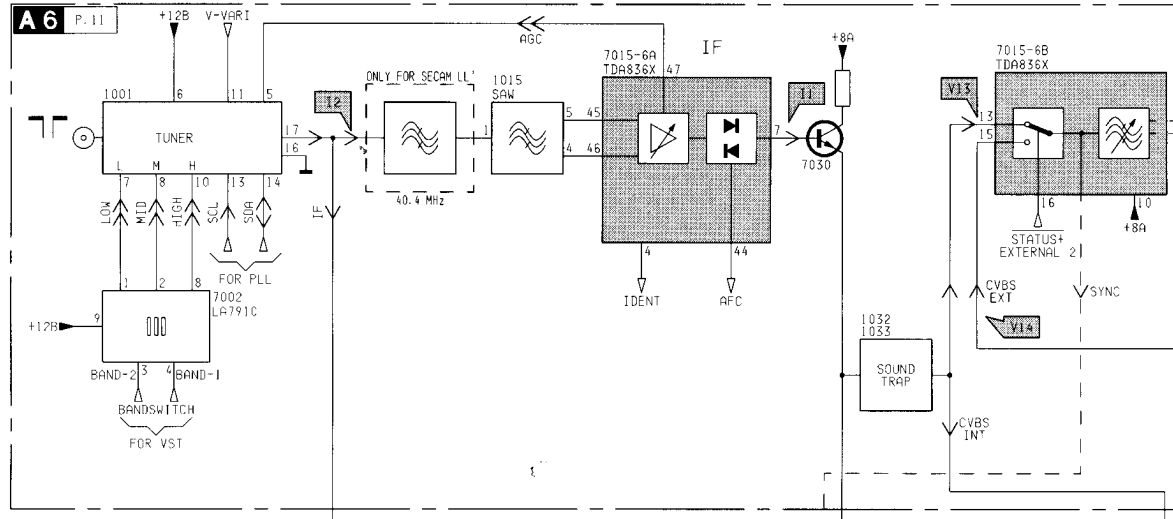
Mini neck CRT panel (Back view)



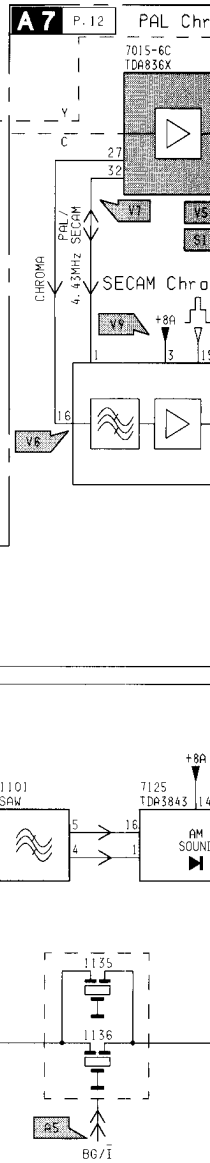
Narrow neck CRT panel (Back view)



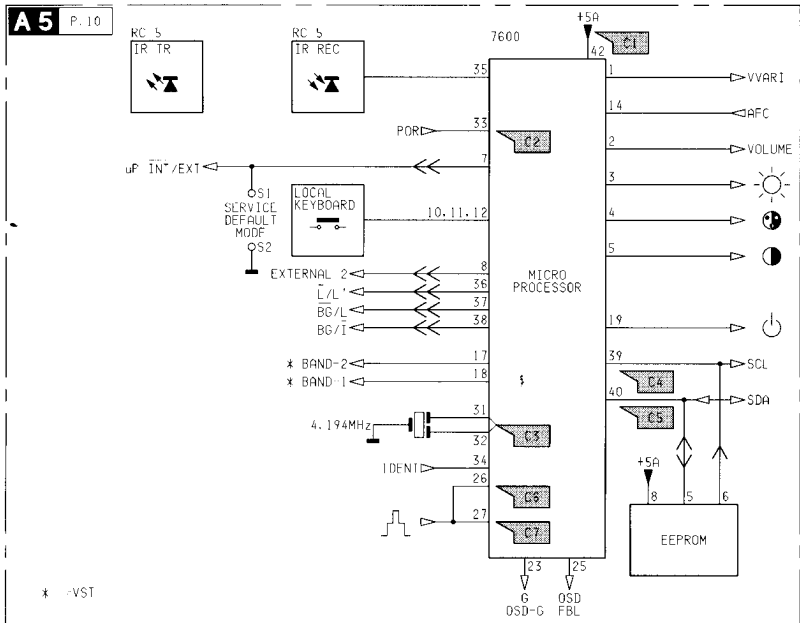
TUNING + IF



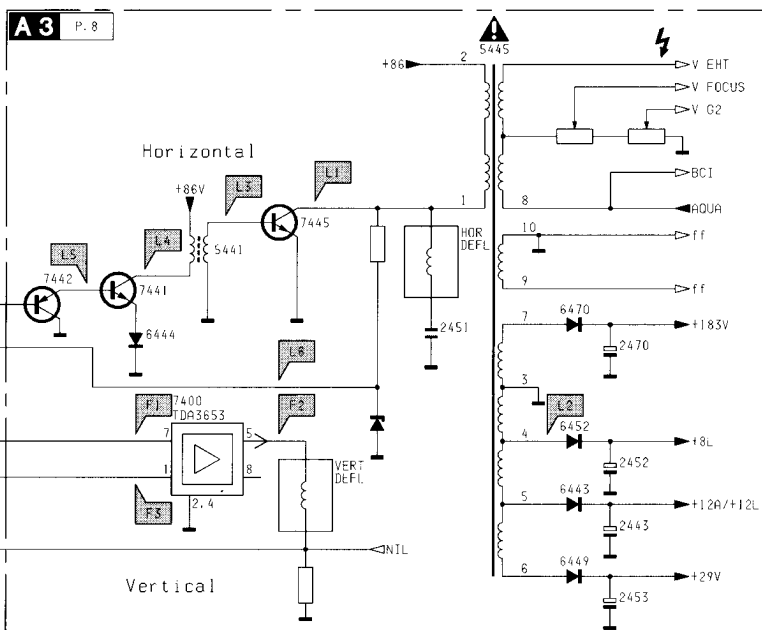
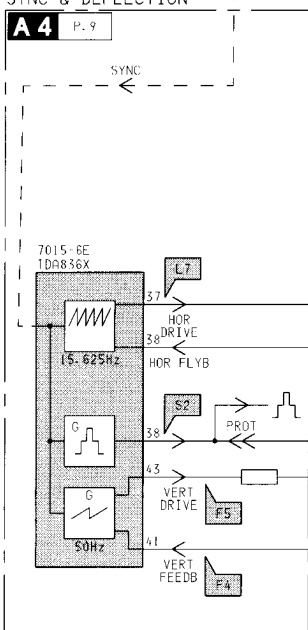
VIDEO + SOUND



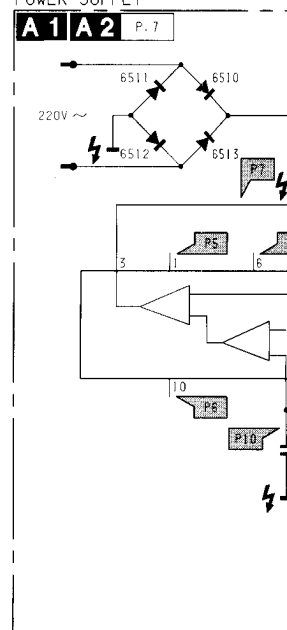
CONTROL



SYNC & DEFLECTION

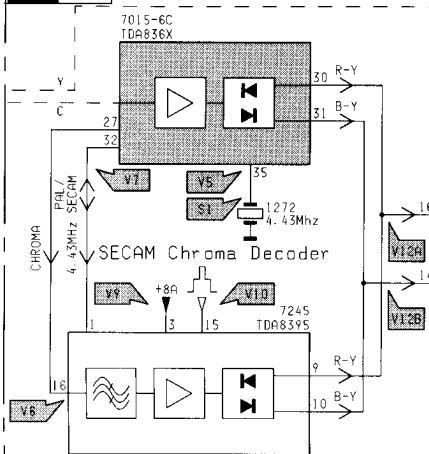


POWER SUPPLY

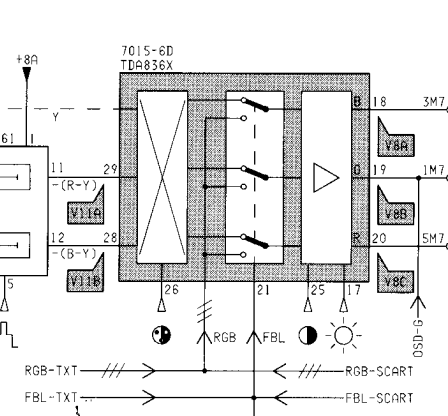


VIDEO + SOUND

A7 P.12 PAL Chroma decoder

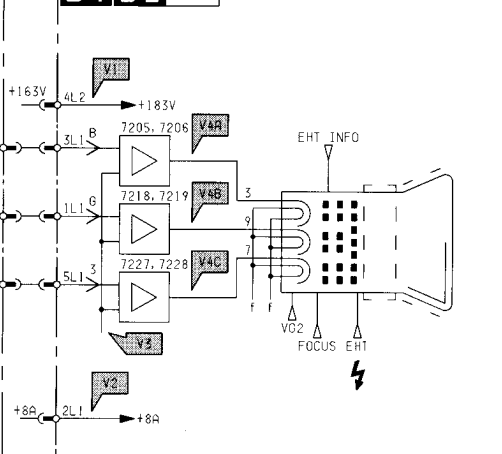


Delay Line Video Controller



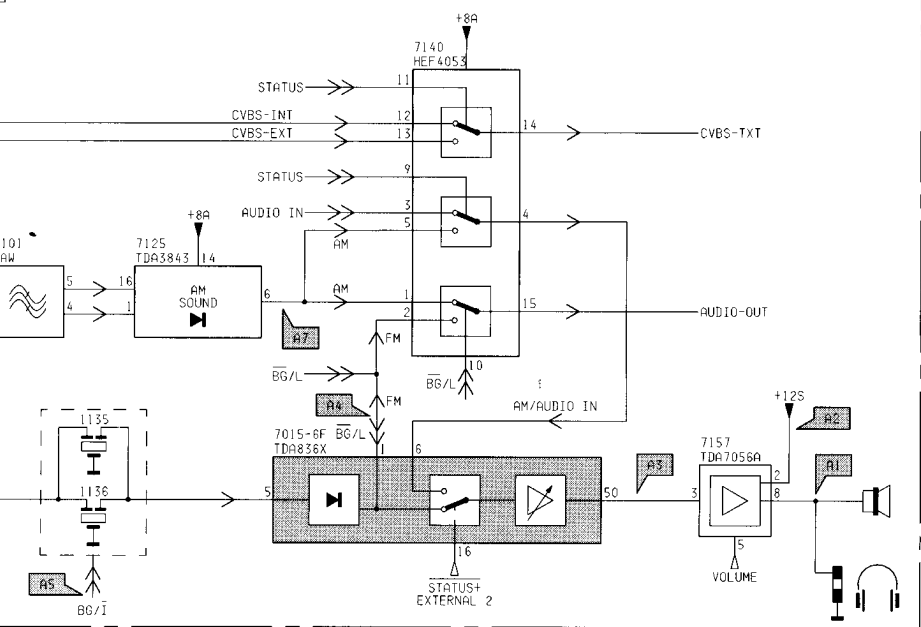
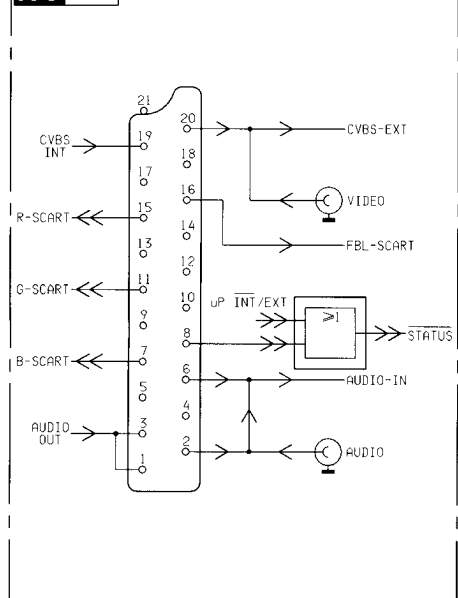
CRT PANEL

B1 B2 P.14



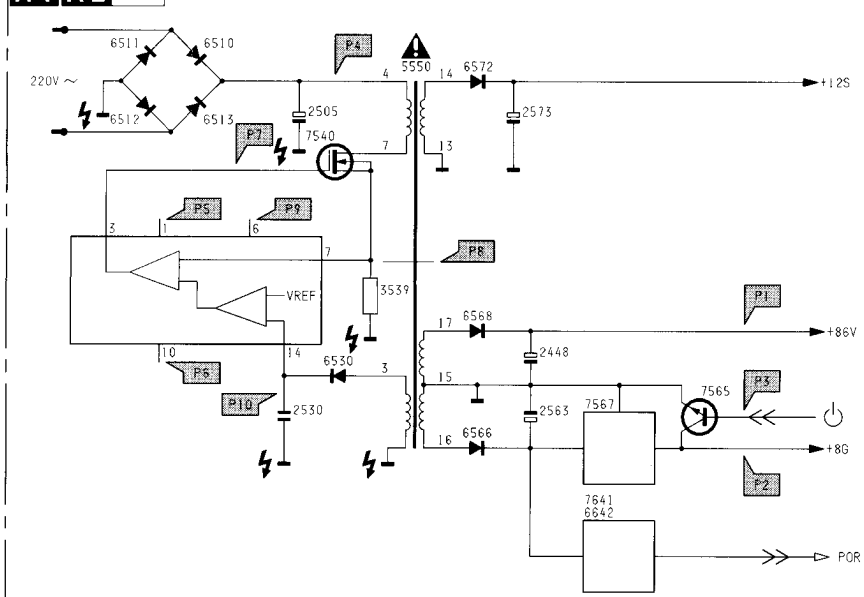
CONNECTIONS

A6 P.11



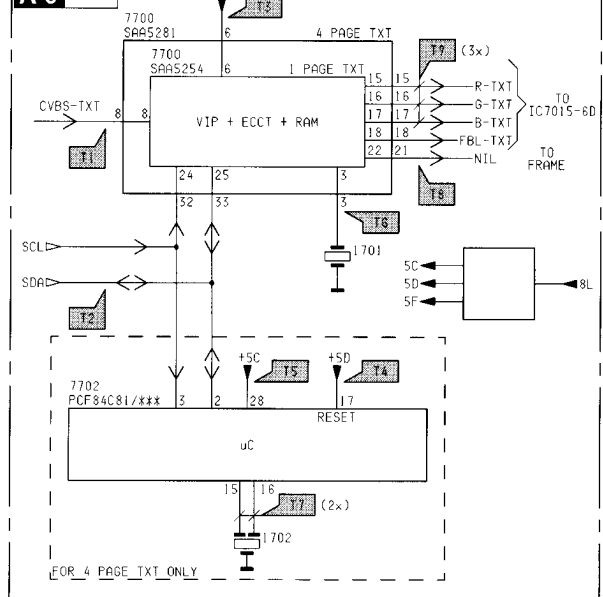
POWER SUPPLY

A1 A2 P.7



TELETEXT

A9 P.13



6. Mono carrier / Hauptplatine / Châssis

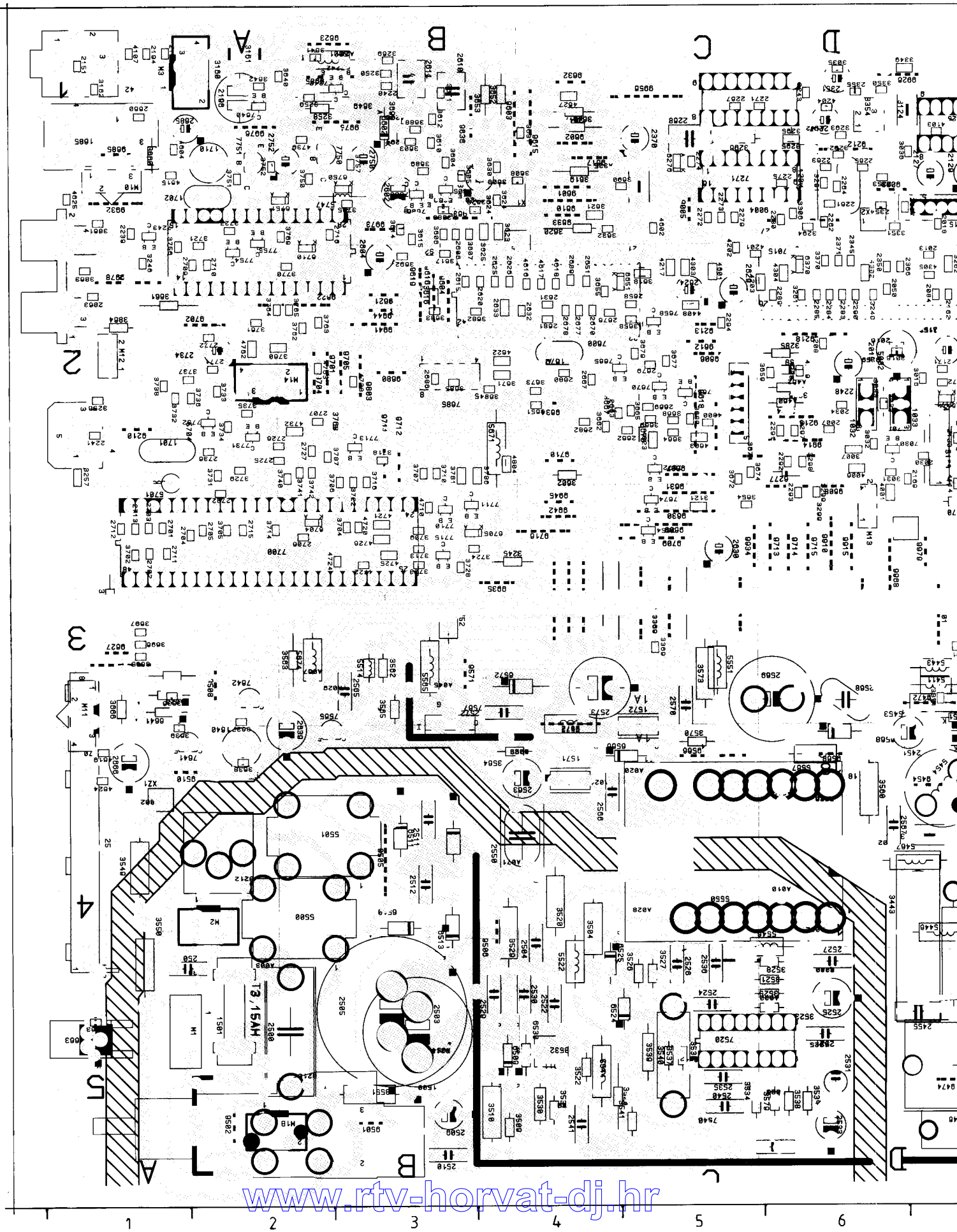
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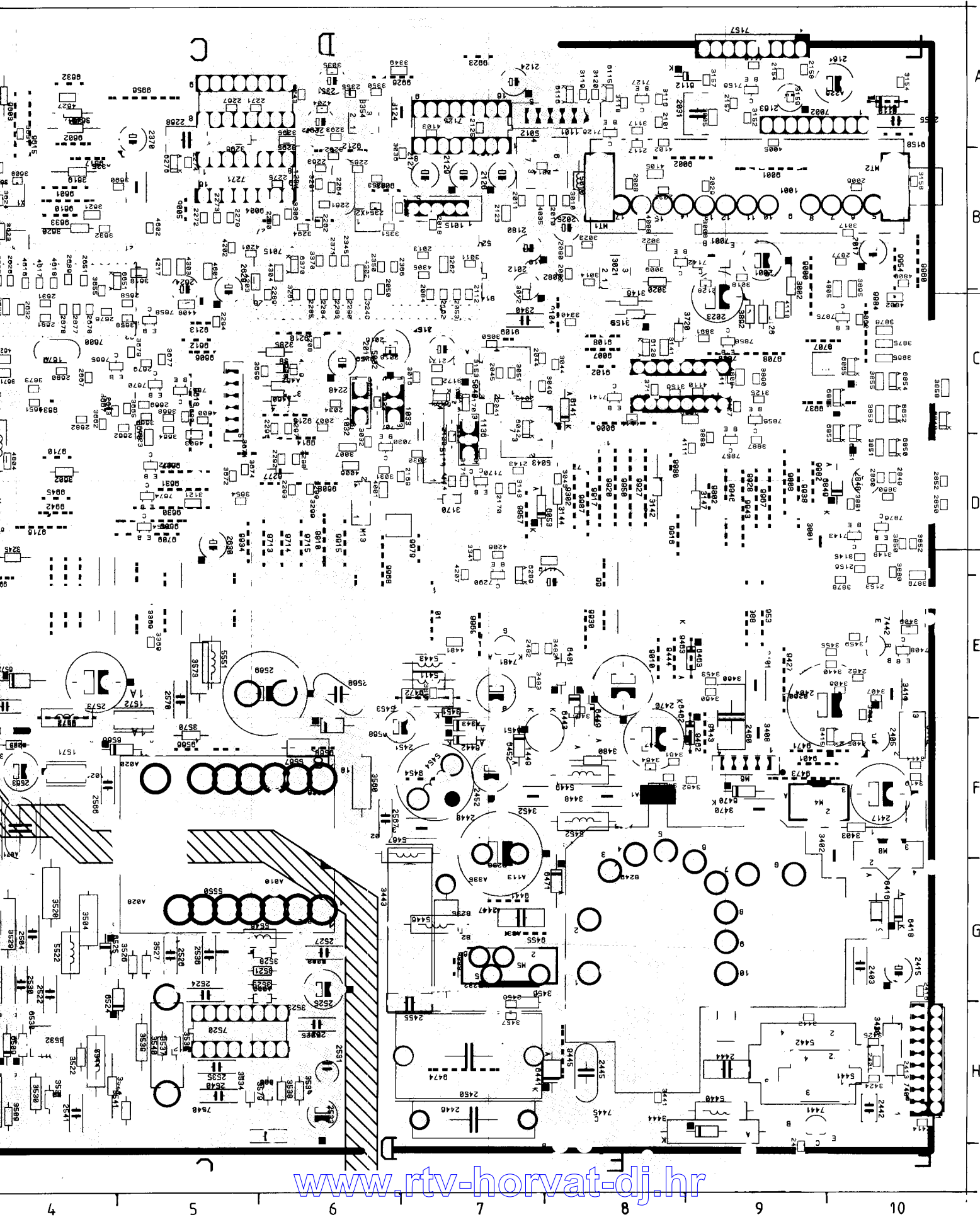
6

w	D6	2262 B6*	2662 C4*	3256 C1*	3603 A3*	3761 C2*	5449 F8	7567 E3	9636 A3
M1	H1	2263 B6*	2663 C4*	3257 D1*	3604 B3*	3762 C2*	5452 F8	7600 C4	9680 C3
M1B	H2	2264 B6*	2666 F1	3258 A2	3605 B3*	3763 C2*	5453 E7	7605 B3*	9685 B1
S1	B4	2265 B6*	2667 C4*	3259 A2*	3606 B3*	3764 C2*	5454 F7	7640 A2*	9701 C2
X21	F1	2267 A5*	2669 C5*	3261 C6*	3607 B3*	3765 C2*	5467 F6	7641 F1	9702 C1
X1	B4	2268 A5	2670 C4*	3262 B7*	3608 B4*	3768 D2	5500 G2	7642 E2	9704 C2
Y1	E10	2271 A5*	2676 C4*	3269 A3*	3610 A3*	3769 B2*	5501 F2	7654 D5*	9705 C2
W1	C9	2272 B5*	2677 C4*	3284 C6	3611 A3*	3770 B2*	5514 E3	7657 C5*	9707 C9
S2	B3	2273 B5*	2678 C4*	3285 C5	3612 A3*	3781 D3*	5522 G4	7658 C5*	9708 C9
M2	G2	2274 B5*	2679 C5*	3286 C6	3614 B3*	3786 D3*	5544 H4	7665 C4*	9709 D5
X2	B6	2275 B6*	2680 C4*	3291 B6*	3615 B3*	3787 D2*	5546 G5	7670 C5*	9710 D4
M3	A1	2279 B5*	2681 C4*	3292 B6*	3616 C3	3788 E1	5550 F5	7672 D5*	9711 D3
0004	C1	2280 B6*	2682 C4*	3293 A6*	3617 B3*	3850 D10*	5551 E5	7674 D5*	9712 D3
M4	F9	2283 C6*	2685 A1	3294 B6*	3618 B5*	3851 D10*	5565 E3	7685 C3	9713 D5
M5	G7	2284 C6*	2686 C3*	3295 A6*	3619 B4	3852 D10*	5567 F6	7686 B3*	9714 D6
M6	F9	2285 C6*	2689 B4*	3296 A5	3620 B4	3853 C10*	5572 E4	7700 D2	9715 D6
M7	C5	2289 C5*	2701 D1*	3297 C6*	3621 B4*	3855 C10*	5601 A2	7702 B2	9716 D4
M8	F10	2290 C6*	2702 D1*	3298 D6*	3623 B4*	3858 C10*	5671 D4	7710 D3*	9802 D9
M10	B1	2291 C5*	2703 D1*	3299 D6*	3624 B4*	3860 D10*	5674 E2	7711 D3*	9803 C3
M11	E1	2292 D6*	2704 D1*	3306 B6*	3625 B3*	3861 B1*	5677 C4	7713 D3*	9910 D6
M12	C1	2293 D6*	2705 D1*	3340 C8*	3628 B3*	3862 C10*	5701 D1	7715 D3*	9914 D6
M13	D6	2294 C5*	2706 D2*	3341 D7*	3630 B4*	3863 B1*	5704 C1	7731 C2*	9915 D6
M14	C2	2295 E7	2707 C2*	3345 B5	3631 A4*	3864 C1	5734 C2	7732 C2*	9916 D8
0022	I2	2297 A6	2709 B1*	3349 A6*	3632 B4*	3865 C10*	5747 B2	7750 B2	9917 D8
0025	F1	2340 C7	2710 B2*	3350 A6*	3636 E1*	3871 C9	5752 E3	7751 B2	9918 E8
41	B1	2345 B6*	2711 D1*	3351 B6*	3637 E2*	3875 C10*	6042 C7*	7754 B2*	9920 D8
0042	A1	2350 B6*	2712 D1*	3353 B6*	3638 F2*	3876 C10*	6053 D7	7755 B2*	9922 E5
0043	C10	2351 A6	2713 D1*	3354 A6	3639 F1*	3878 E9*	6110 A10	7856 C9*	9923 A7
1001	B9	2354 B6*	2715 D2*	3368 E5	3640 A2*	3879 D10*	6112 A8	7857 D9*	9924 E5
1015	B7	2355 A6*	2716 B2*	3369 E5*	3641 A2*	3880 D10*	6115 A8*	7858 C9*	9926 A6
1032	C6	2366 B6*	2725 D2*	3370 B6*	3642 A2*	3881 D10*	6116 A8*	7875 C9*	9927 D8
1033	C6	2370 A4	2726 D2*	3371 E7*	3647 A4	3887 D9*	6128 C8*	7876 D10*	9928 D9
1101	A7	2371 B6*	2727 D2*	3401 E9	3648 A4	3888 D9*	6141 C8	9000 B9	9930 E8
1135	D7	2401 H10*	2732 D2*	3402 F9	3649 A2	3889 C8*	6170 C7*	9001 B9	9932 B1
1136	D7	2403 G10	2734 C2	3403 F10	3651 C4*	3890 C9*	6171 C7*	9002 B8	9934 D5
1200	B6	2404 E9	2736 D2*	3404 E10*	3652 A4	3891 C9*	6276 B5*	9003 B6	9935 E4
1272	B6	2405 F10	2750 B3	3405 F10*	3653 A3	3892 C9	6277 D6	9004 B6	9937 C9
1449	F7	2413 H10*	2752 B2	3406 E9*	3654 D5*	3895 B10*	6289 D7*	9005 B5	9938 D9
1500	H3*	2414 H10*	2771 C2*	3407 E10*	3655 B4*	4001 D6*	6370 B6*	9006 C8	9941 C3
1501	G2	2415 G10	2772 C2*	3408 F9	3656 C5	4005 A9*	6415 F9*	9007 C8	9942 D4
1571	F4	2416 G10*	2848 D10	3409 E10*	3658 C4*	4006 D6*	6416 G10	9008 D9	9943 D3
1572	F5	2417 F10	2849 D10*	3410 F10	3659 C5*	4008 B8*	6418 G10	9009 E9	9944 C3
1640	F2	2442 H10	2850 D10*	3411 E10	3660 B1	4035 B7*	6441 H7	9010 E8	9945 D4
1679	C4	2443 E7	2852 D10*	3412 F10	3661 C1	4102 A8*	6442 F7	9101 E7	9946 D9
1685	A1	2444 H9	2860 D10*	3414 F10*	3662 C4*	4103 A7*	6443 E8	9102 C8	9947 C5
1701	D1	2445 H8	2863 C1*	3419 F10*	3663 H1*	4105 B8*	6444 H9	9104 C7	9950 D8
1702	B2	2446 H7	2877 B9*	3420 H10	3664 C5*	4107 A1*	6449 E8	9108 C8	9953 E9
1710	B2	2447 G7	3001 D9	3421 G7	3665 C4*	4110 C8*	6451 F7	9109 C7	9954 B10
2001	B9	2448 F7	3002 B9	3424 H10*	3666 E1	4111 D8*	6452 F7	9111 C9	9956 A5
2006	B10*	2450 H7	3005 A9*	3425 H10*	3667 C4	4114 D7*	6462 F8	9112 A10	9957 D7
2007	C6*	2451 F6	3007 D6*	3426 E8*	3668 C5*	4116 A9*	6463 E8	9158 A10	9959 E9
2008	B8*	2452 F7	3008 B8*	3440 E9*	3669 C5*	4118 C9*	6470 F9	9210 C1	9960 B10
2010	B7*	2453 E8	3009 B8*	3441 H8*	3670 C5	4119 D7*	6471 G7	9212 B6	9967 D9
2011	B7*	2455 H6	3010 B8*	3442 H9*	3671 C4*	4141 C8*	6481 E8	9213 C5	9968 D6
2012	B7	2456 H7*	3011 B7*	3443 G6	3672 D5*	4201 B5*	6509 H4	9215 C6	9969 E7
2013	B7*	2460 E9	3012 C7*	3444 H9	3673 C4*	4202 B5*	6510 G3	9218 C6	9972 E5
2014	B7*	2461 I9*	3014 B8*	3446 E10	3674 D5*	4203 B5*	6511 F3	9302 D8	9973 B3
2015	C6	2462 E10*	3016 C6*	3448 F8	3676 E4	4204 A6*	6512 F3	9401 F9	9975 A2
2016	C6*	2470 F8	3017 B10*	3451 E7	3677 C5*	4206 D7*	6513 G3	9427 E9	9976 A2
2017	B10	2482 E7*	3018 B9*	3452 F7	3679 C4*	4207 D7*	6524 G4	9441 G7	9978 B1
2018	B7*	2500 H2	3020 B8	3453 E9*	3680 C5*	4208 C6*	6525 G4	9443 F9	9979 D7
2022	B8*	2503 H3	3021 B8	3454 F7	3682 C3*	4209 C6*	6530 H4	9444 E8	9980 D8
2023	C9	2504 G4	3022 B8*	3455 E9*	3683 C3*	4217 B5*	6566 F4	9445 H8	9981 E6
2025	B8	2505 G3	3023 B8*	3456 H7	3684 C3*	4300 C5*	6568 F6	9453 E10	9982 D9
2029	B9*	2506 G1	3030 D6	3457 H7*	3685 C3*	4302 B6*	6572 E4	9454 F7	9983 E9
2030	D6*	2509 H3	3031 D6*	3459 E10*	3686 B3*	4303 B5*	6602 A3	9455 G7	9984 C10
2031	A8	2510 H3	3032 D6*	3460 E9*	3687 A3	4304 B6*	6641 E1	9462 F8	9985 A2
2032	B8*	2511 F3	3033 C6*	3461 F8*	3688 A3*	4305 B7*	6642 E1	9463 E8	9987 D8
2034	C6*	2512 G3	3035 A6*	3462 F8*	3689 B3*	4408 C5*	6651 B4*	9471 F9	9988 E9
2037	B6*	2521 H6	3036 B6*	3463 F8*	3690 B4*	4481 E7*	6658 C6	9472 E7	9999 G7
2041	C7*	2522 G4	3043 D7*	3464 F8*	3692 B3*	4601 B5*	6663 H1	9473 F9	
2043	C7*	2524 G5	3044 C7*	3470 F9	3693 A3	4602 B5*	6704 D2*	9474 H7	
2044	C7*	2525 G6	3049 C7*	3480 F8	3695 E1*	4603 C5*	6705 D3*	9501 H3	
2045	C7*	2526 G5	3050 C7*	3481 E8*	3696 E1*	4604 A1*	6710 B2*	9502 H2	
2050	B6*	2527 G6	3051 C7*	3482 E7*	3697 E1*	4615 B1*	6750 B2*	9505 F3	
2053	C7*	2529 G3	3116 A8*	3483 E7*	3702 D1*	4616 B4*	6751 B2*	9506 G4	
2080	B8*	2530 G4	3117 A8*	3504 G4	3704 D2*	4617 B4*	6848 C10*	9508 E2	
2082	B8	2531 H6	3118 A8*	3506 F2	3705 D2*	4618 B4*	6849 D9	9510 F1	
2084	C7*	2533 H6	3119 A8*	3509 H4	3706 D2*	4619 F1*	6850 D10*	9528 G5	
2101	A8*	2534 H5	3120 A8*	3510 H3	3707 D3*	4622 C4*	6851 C10*	9568 F5	
2112	C7*	2535 H5	3121 D5*	3520 G4	3709 D3*	4623 D5*	6852 C10*	9568 F6	
2117	A8*	2536 G5	3124 A6	3521 G5	3710 D3*	4624 F1*	6853 C9*	9571 E3	
2123	B7*	2540 H5	3125 C9*	3522 H4	3713 D3*	4625 B1*	6854 C10*	9572 E4	
2124	A7	2541 H4	3126 C9	3523 G5	3714 D2*	4627 A4*	6855 C9*	9601 B4	
2125	A7*	2550 F4	3127 C9*	3524 H4	3716 D3*	4710 D3*	6865 C10*	9602 A4	
2126	B7	2563 F4	3141 C8*	3525 G5	3718 D3*	4720 D3*	7001 B9	9603 A4	
2127	B7	2565 E2	3142 D8	3526 G4	3719 C8*	4721 D3*	7002 A9	9604 C3	
2128	B9*	2566 F4	3143 D7*	3527 G5	3720 C8	4722 D3*	7015 B6	9605 D5	
2129	B7	2567 F6	3144 D7	3528 G5	3721 B1*	4724 D2*	7030 D6*	9606 C5	
2130	D7*	2568 E6	3145 D10*	3529 G4	3722 D3*	4725 D3*	7125 A7	9607 D5	
2143	D7*	2569 E5	3146 C8	3530 H4	3723 D3*	4726 D3*	7126 A8*	9608 D6	
2151	A1*	2570 E5	3147 D8	3531 H4	3724 D3*	4732 C2*	7127 A8*	9609 D5	
2152	C7	2572 E4	3148 D10*	3532 H4	3725 B2*	4738 C3*	7140 C8	9610 B4	
2153	E10*	2573 E4	3152 A9*	3533 H6	3727 B2*	4739 A2*	7141 C8*	9612 C5	
2154	A9*	2602 B3	3153 C7*	3534 H5	3728 D3*	4762 C2*	7142 B8*	9615 A4	
2155	A10	2604 B3	3154 A10*	3536 H5	3729 D2*	4763 C2*	7143 D10*	9616 C3	
2156	D10*	2606 B3*	3155 C8	3537 H5	3731 D2*	4802 C10*	7156 A9*	9617 B4	
2157	A9*	2610 A3	3156 C8*	3538 H6	3732 C1*	4804 D4*	7157 A9	9618 C5	
2158	A9*	2611 A3	3157 A9*	3539 H5	3733 C2*	4805 B9*	7170 D7*	9619 C3	
2161	A9	2615 B3*	3158 B10*	3540 H5	3734 C2*	4806 B10*	7242 A2*	9620 C4	
2162	C7*	2620 B3*	3159 A9*	3541 H4	3735 C2*	4808 C9*	7243 B1*	9621 C3	
2163	A9	2623 B3	3160 A2	3549 F1	3736 C1*	5010 B8	7250 A5	9622 C2	
2169	D6*	2624 B5	3161 A2	3550 G1	3737 C1*	5012 B7	7271 B5	9623 A2	
2170	D7*	2625 B4*	3162 A1*	3551 H3	3738 C1*	5032 C6	7290 D7*	9624 E4	
2171	C7*	2626 B4*	3169 D7	3560 F6	3740 D2*	5040 C7	7400 H10	9625 E1	
2180	B7	2629 B5	3170 D7	3562 E3	3741 D2*	5043 C7	7401 H10	9626 E4	
2194	A1*	2630 D5	3171 D7*	3563 E2	3742 D2*	5130 D7	7408 E10*	9627 E1	
2195	A1*	2631 C4*	3172 C7*	3564 F4	3749 E1	5411 E7	7441 H9	9628 E4	
2196	A2	2632 C4*	3173 D7*	3565 E3	3750 B2*	5440 H9	7442 E10	9630 D5	
2239	B1*	2633 C4*	3243 A6*	3570 F5	3751 B2*	5441 H9	7445 H8	9631 D5	
2240	A3*	2639 F2	3245 D4	3573 E5	3752 B2*	5442 H9	7481 E7	9632 A4	
2241	C1*	2651 B4*	3246 B1*	3574 H6	3753 B1*	5443 E7	7520 H5	9633 B4	
2248	C6	2658 C4*	3248 C6*	3600 E9	3754 B3*	5444 B9	7540 B8	9634 C4	
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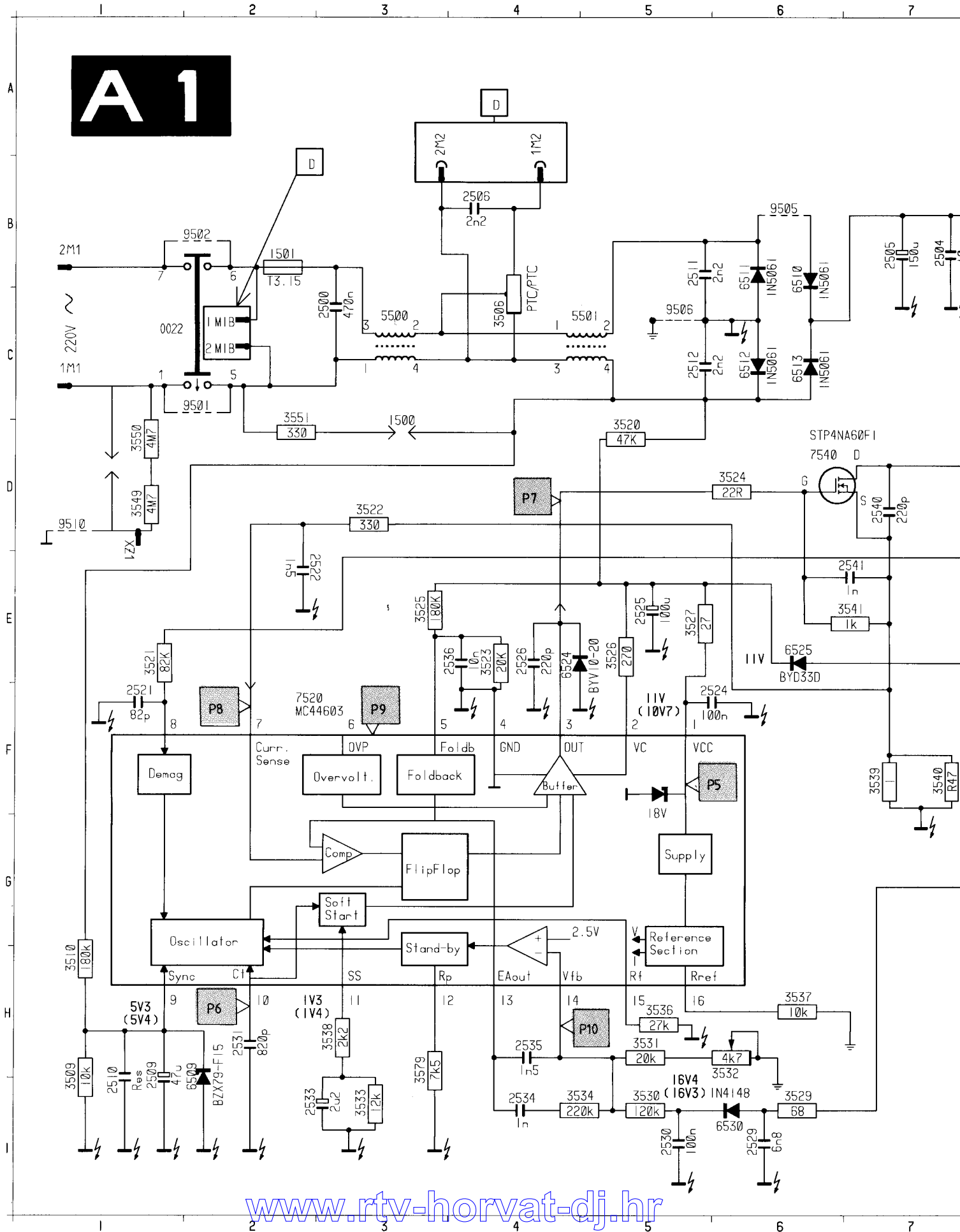
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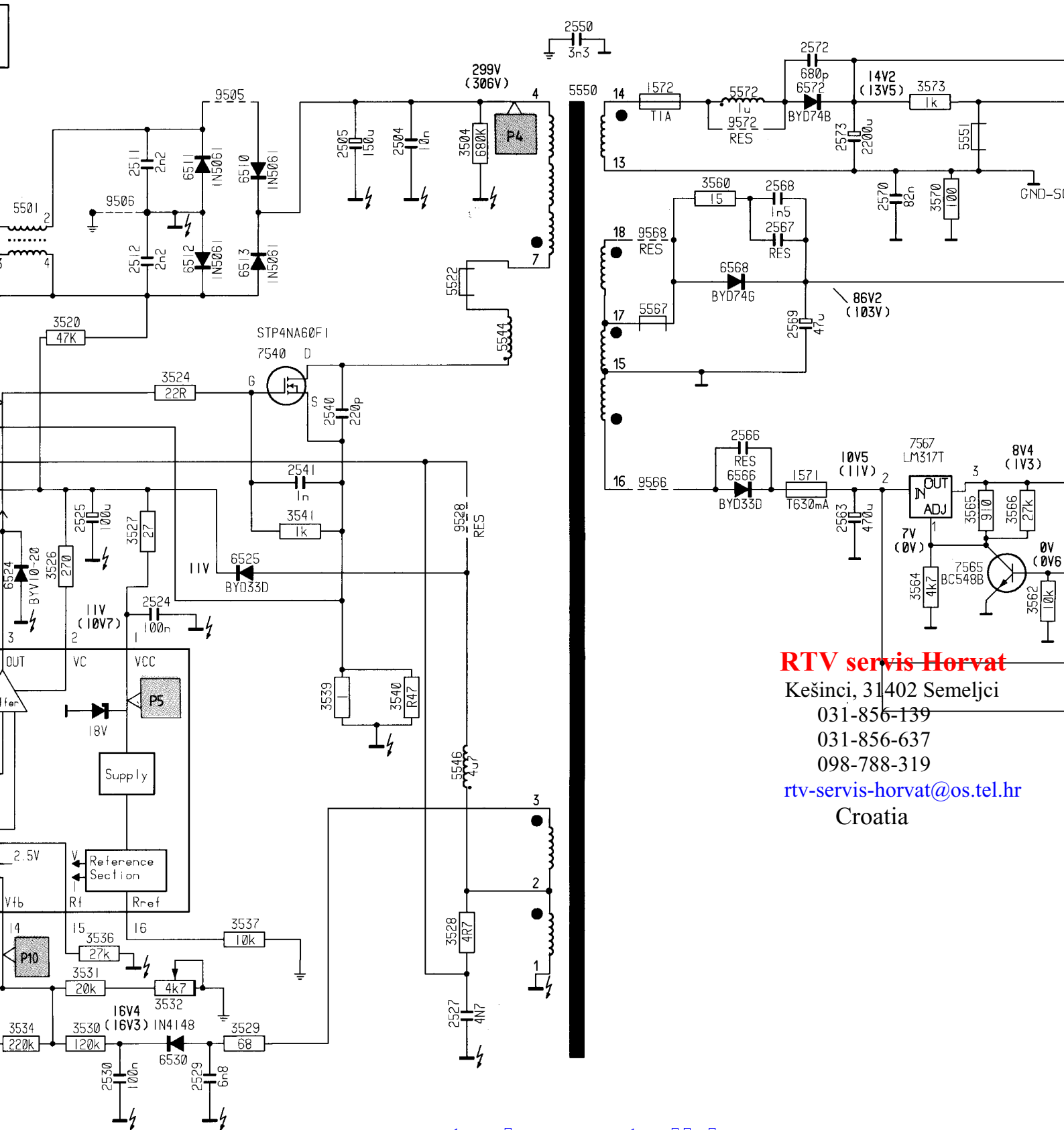
www.rtv-horvat-dj.hr





A1





RTV servis Horvat

Kešinci, 31402 Semeljci

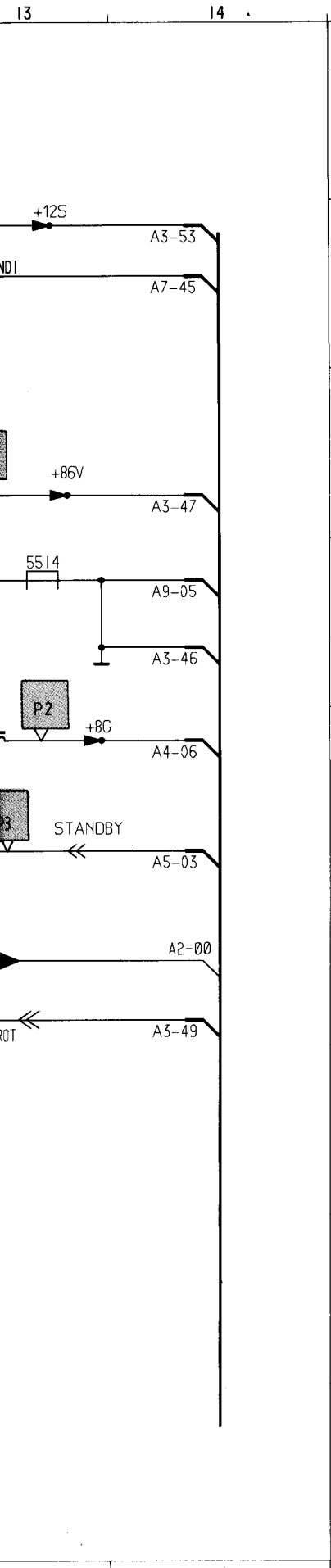
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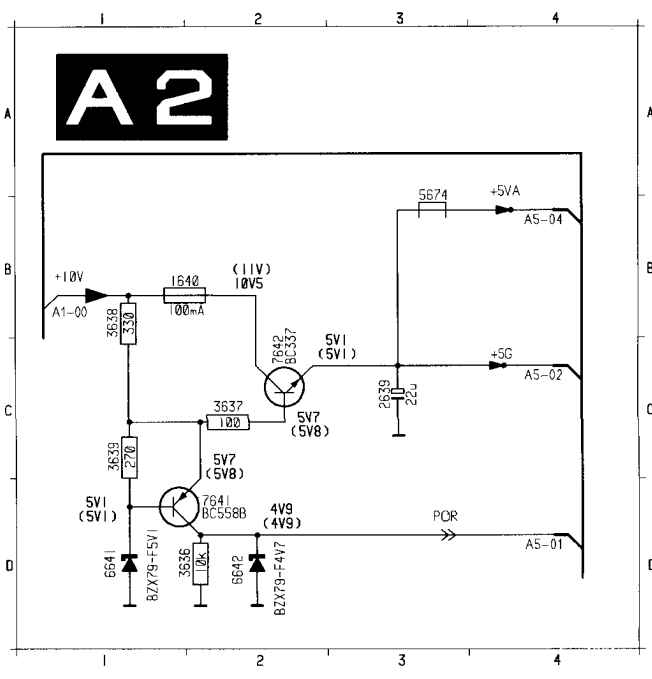
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rtv-servis-horvat@os.tel.hr

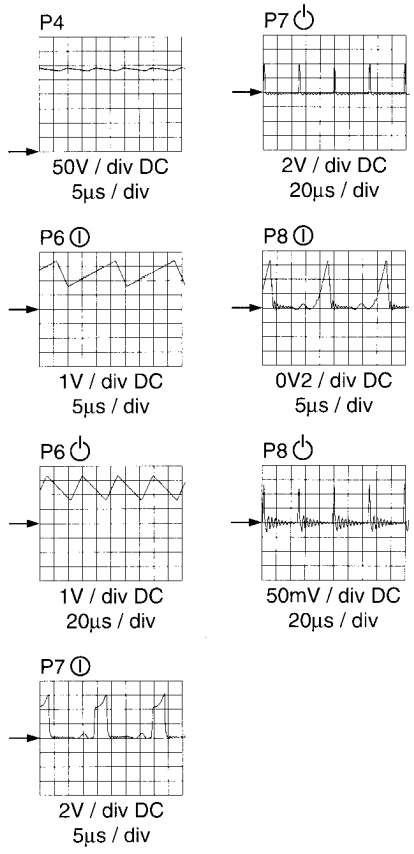
Croatia



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1500	D	3	7540	D	6
1501	B	2	7565	E	11
1571	E	10	7567	D	11
1572	B	9	9501	C	2
2500	B	3	9502	B	2
2504	B	7	9505	B	6
2505	B	4	9506	C	5
2506	B	4	9510	C	1
2509	H	1	9528	E	8
2510	H	1	9566	C	9
2511	B	5	9568	C	9
2512	C	5	9571	F	12
2521	B	5	9572	B	10
2522	F	2	A2-00	F	14
2524	F	5	M1	C	1
2525	F	5	M1	C	1
2526	F	4	M1B	C	2
2527	F	4	M1B	C	2
2529	I	1	M2	A	3
2530	I	1	M2	A	3
2531	H	5	M2	A	4
2533	I	2	S-03	E	14
2534	I	4	S-05	D	14
2535	H	4	S-06	S	14
2536	E	4	S-45	B	14
2540	E	7	S-46	D	14
2541	E	7	S-47	C	14
2550	E	9	S-48	B	14
2553	A	9	S-49	B	14
2565	E	2	XZ1	D	1
2566	D	0			
2567	C	0			
2568	C	0			
2569	D	0			
2570	C	1			
2572	B	0			
2573	B	8			
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3506	B	4			
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3551	D	2			
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3562	F	12			
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3566	E	12			
3570	C	11			
3573	B	11			
3579	H	3			
5500	C	3			
5501	C	5			
5514	D	3			
5522	C	8			
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5546	G	8			
5550	B	8			
5551	B	1			
5565	E	3			
5567	C	9			
5572	B	10			
6509	H	1			
6510	B	6			
6511	B	6			
6512	C	6			
6513	C	6			
6524	E	4			
6525	E	6			
6530	I	6			
6566	E	0			
6568	C	0			
6572	B	0			



1640	B	1
2639	C	3
3638	C	1
3637	C	2
3638	B	1
3639	B	3
5674	D	2
6641	D	2
6642	D	2
7641	D	2
7642	D	2
+10V	B	1
S-01	D	4
S-02	C	4
S-04	B	4

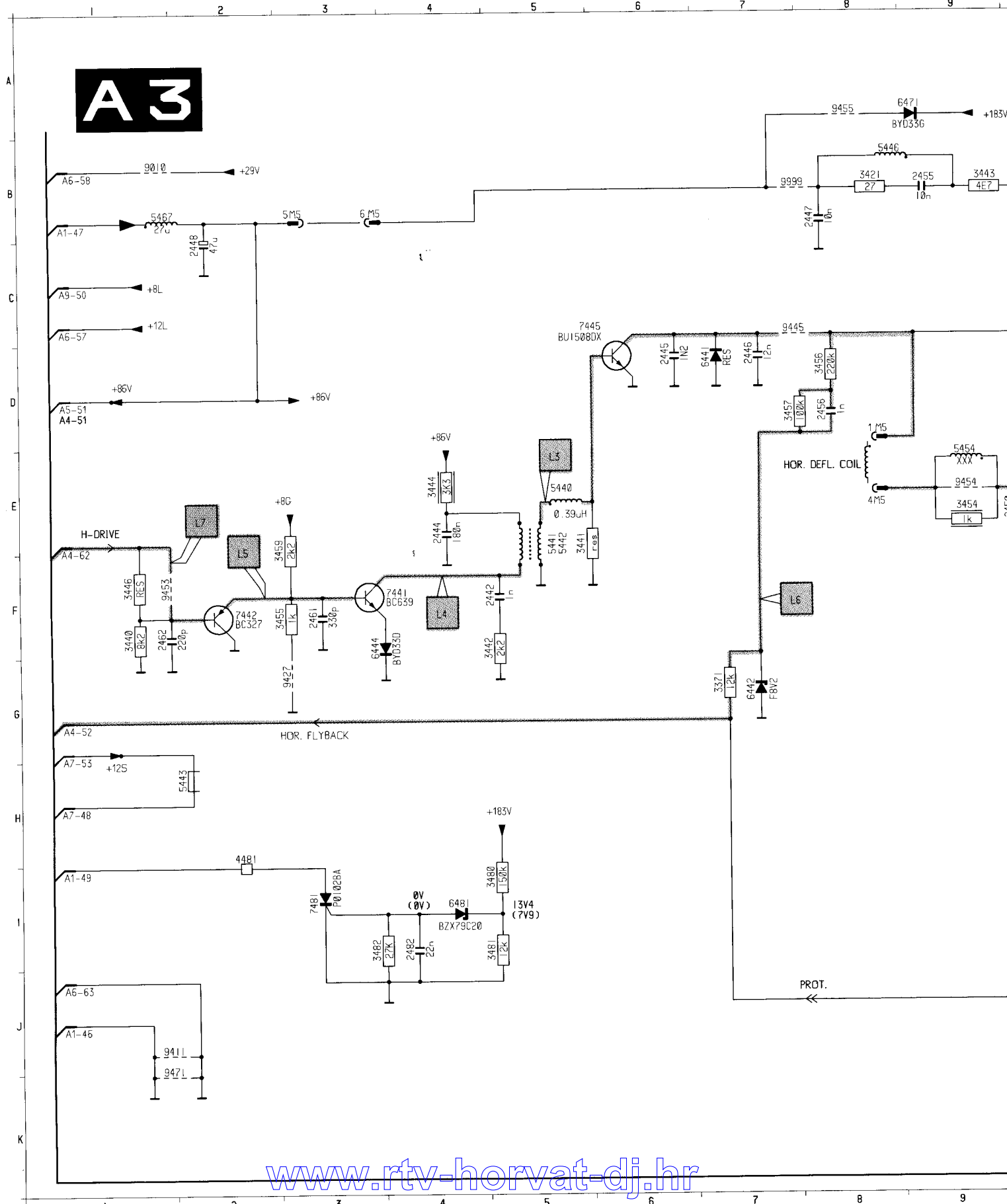


- P1 86V DC
- P2 8V DC
- P3 0V DC
- P3 0V7 DC
- P5 11V DC
- P9 1V6 DC
- P10 2V5 DC

Deflection / Ablenkung / Déflexion

Deflec

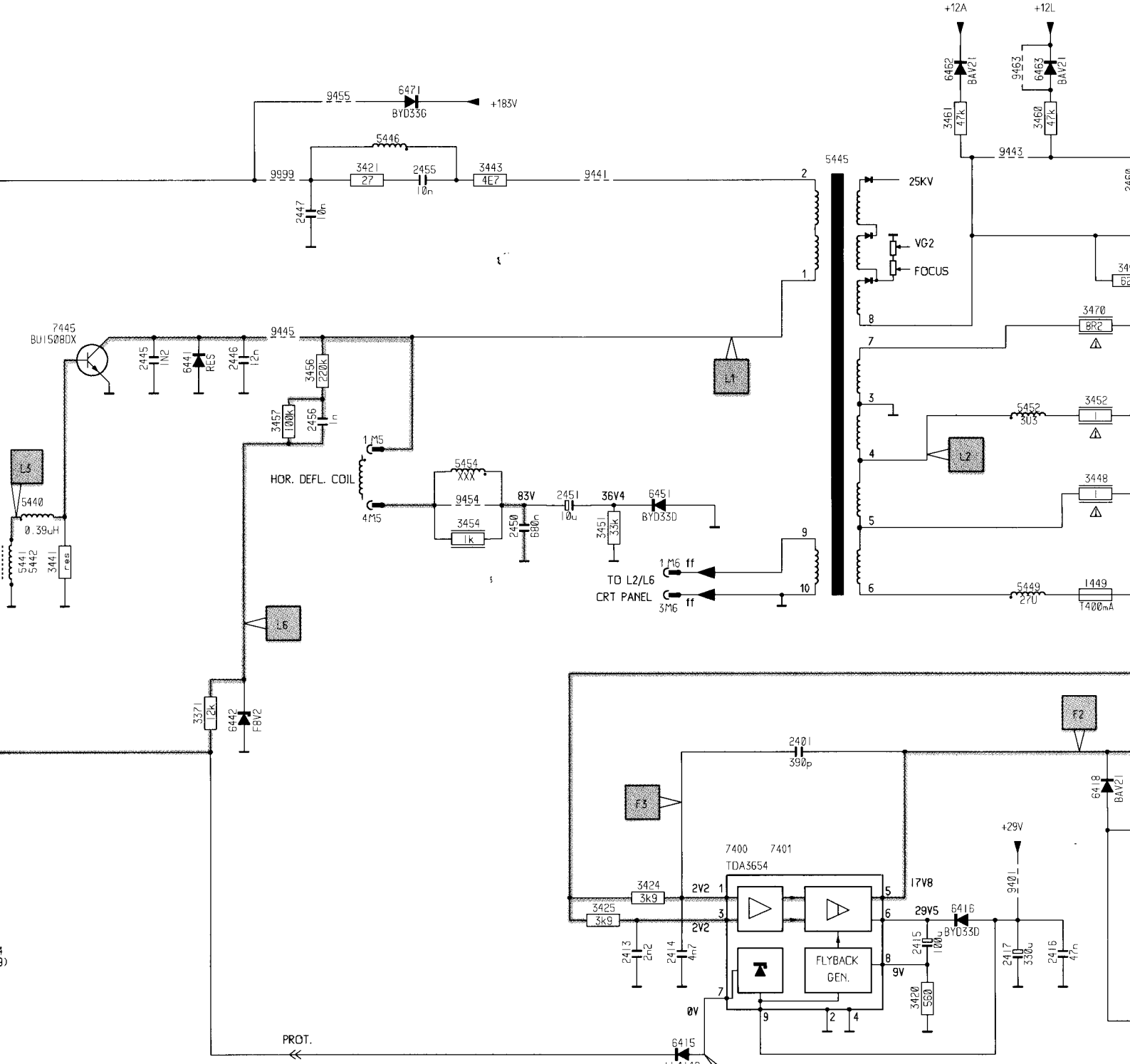
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2401	G12	2415	I13	2445	D 6	2452	D16	2462	F 1	3403	I16	3409	J18	3420	I13	3442	F 6	3452	D15	3459	E 3	3470	C13	5441	F15	5450	D14	6418	D 6
2403	H16	2416	I14	2446	D 7	2453	F16	2470	D16	3404	I16	3410	J17	3421	B 8	3443	B 9	3453	B10	3460	A14	3480	I 1	5442	F15	5451	D16	6441	D 7
2404	I16	2417	I14	2447	B 8	2455	B 9	2482	I 4	3405	I17	3411	J16	3424	H11	3444	F 4	3454	F11	3461	A13	3481	I 1	5443	F15	5452	B 11	6442	F 9
2405	I17	2442	F 5	2448	C 2	2456	D 8	3371	G 7	3406	I17	3412	J16	3425	F11	3446	F 1	3455	D 8	3463	C15	3482	H 2	5445	B 10	5453	B 11	6443	F 10
2413	I11	2443	E16	2450	E10	2460	B15	3401	H15	3407	J17	3414	J17	3440	F 1	3448	E15	3456	D 8	3465	C15	4481	H 2	5446	B 10	6415	J11	6444	F 10



Deflection / Ablenkung / Déflexion

K17	3441	F 5	3451	E10	3457	D 7	3464	C16	5440	F 5	5449	F14	6416	I14	6449	F15	6471	A 9	7442	F 2	9427	G 3	9454	E 9	9953	H18	D-50	C 1	D-57	C 1
I13	3442	F 5	3452	D15	3459	F 3	3470	C15	5441	F 5	5452	D14	6418	G15	6451	F11	6481	I 4	7445	C 5	9441	B10	9455	A 8	9999	B 7	D-51	D 1	D-58	B 1
B 8	3443	B 9	3453	B16	3460	A14	3480	I 5	5442	F 5	5453	D15	6441	D 7	6452	D15	7400	H11	7481	B 1	9443	B14	9463	A14	D-46	J 1	D-52	H 1	D-59	B19
H11	3444	F 4	3454	F 9	3461	A13	3481	I 5	5443	H12	5454	F 9	6442	G 7	6462	A13	7401	H12	9010	B 1	9444	E16	9471	K 1	D-47	B 1	D-53	H 1	D-60	H19
I10	3446	F 1	3455	F 3	3462	C15	3482	I 3	5445	B12	5467	B 1	6443	E15	6463	A14	7408	J17	9401	H14	9445	C 7	9472	D16	D-48	H 1	D-54	G19	D-62	F 1
F 1	3448	E15	3456	D 8	3463	C15	4481	H 2	5446	B 8	6415	J11	6444	F 3	6470	C16	7441	F 4	9411	J 1	9453	F 1	9473	E18	D-49	I 1	D-55	I19	D-63	J 1

5 6 7 8 9 10 11 12 13 14 15



SCREEN SIZE		
ITEMS	4:3	16:9
3403	8K2	10K
3409	680	1K
3419	56	680

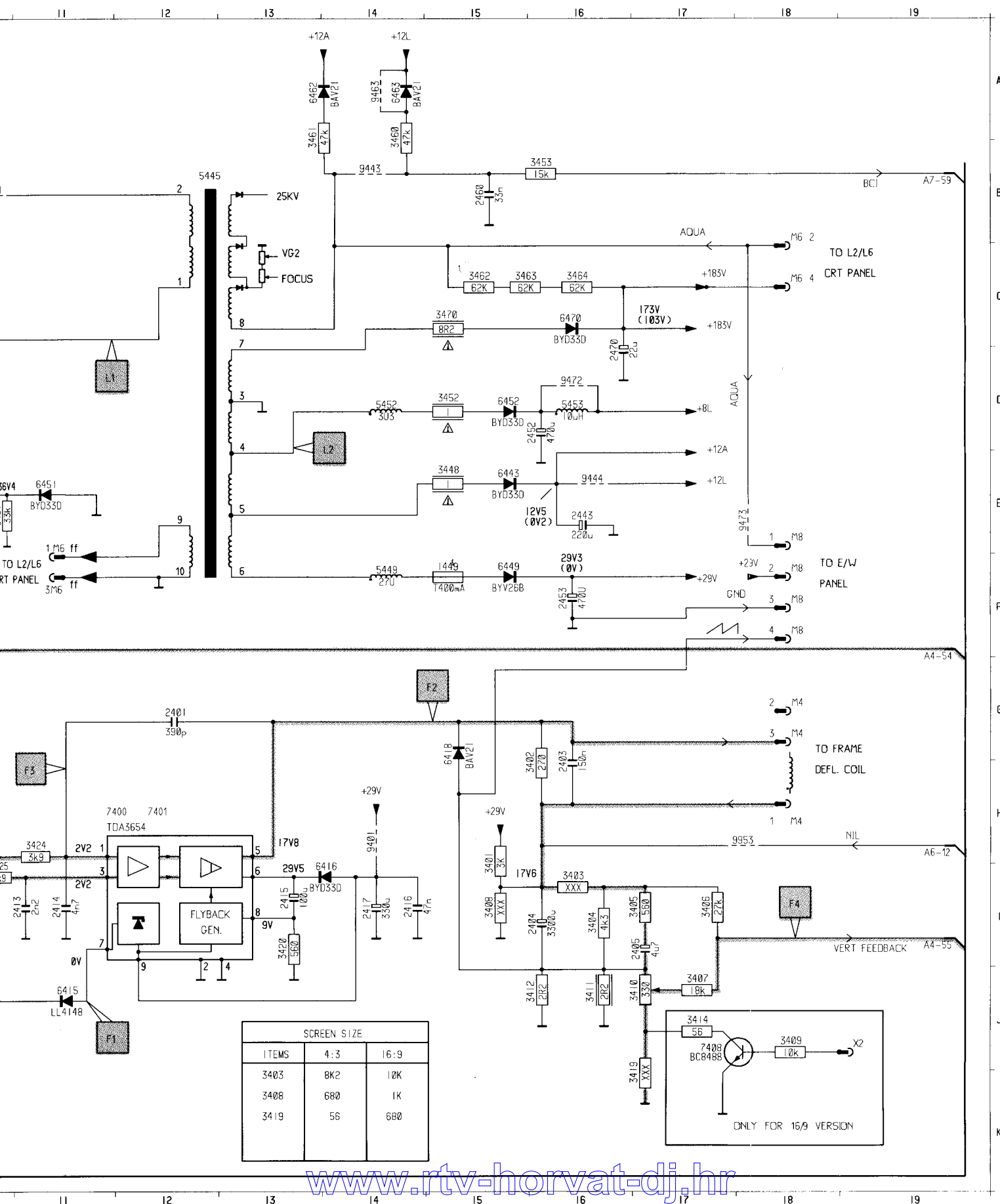
5 6 7 8 9 10 11 12 13 14 15

Ablenkung / Déflexion

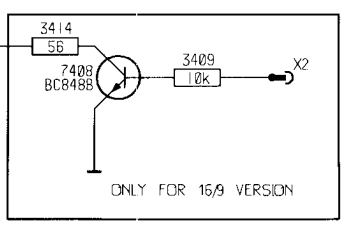
AA5

8

6471	A 9	7442	F 2	9427	G 3	9454	E 9	9953	H18	D-50	C 1	D-57	C 1	M4	H18	M5	D 8	M8	F18
6481	I 4	7445	C 5	9441	B10	9455	A 8	9999	B 7	D-51	D 1	D-58	B 1	M4	G18	M6	F11	M8	F18
7400	H11	7481	I 3	9443	B14	9463	A14	D-46	J 1	D-52	D 6	D-59	B19	M4	G18	M6	F11	M8	F18
7401	H12	9010	B 1	9444	E16	9471	K 1	D-47	B 1	D-53	H 1	D-60	H19	M5	B 3	M6	C18	X2	J19
7408	J17	9401	H14	9445	C 7	9472	E 1	D-48	H 1	D-54	G19	D-62	F 1	M5	B 3	M6	B18		
7441	F 4	9411	J 1	9453	F 1	9473	E18	D-49	I 1	D-55	I19	D-63	J 1	M5	E 8	M8	F18		

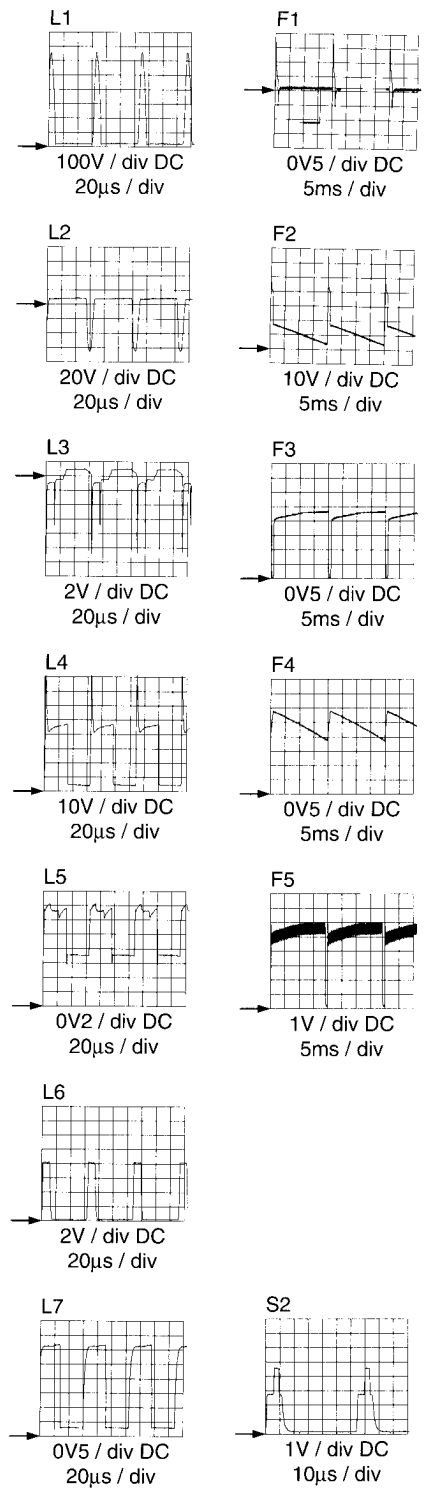
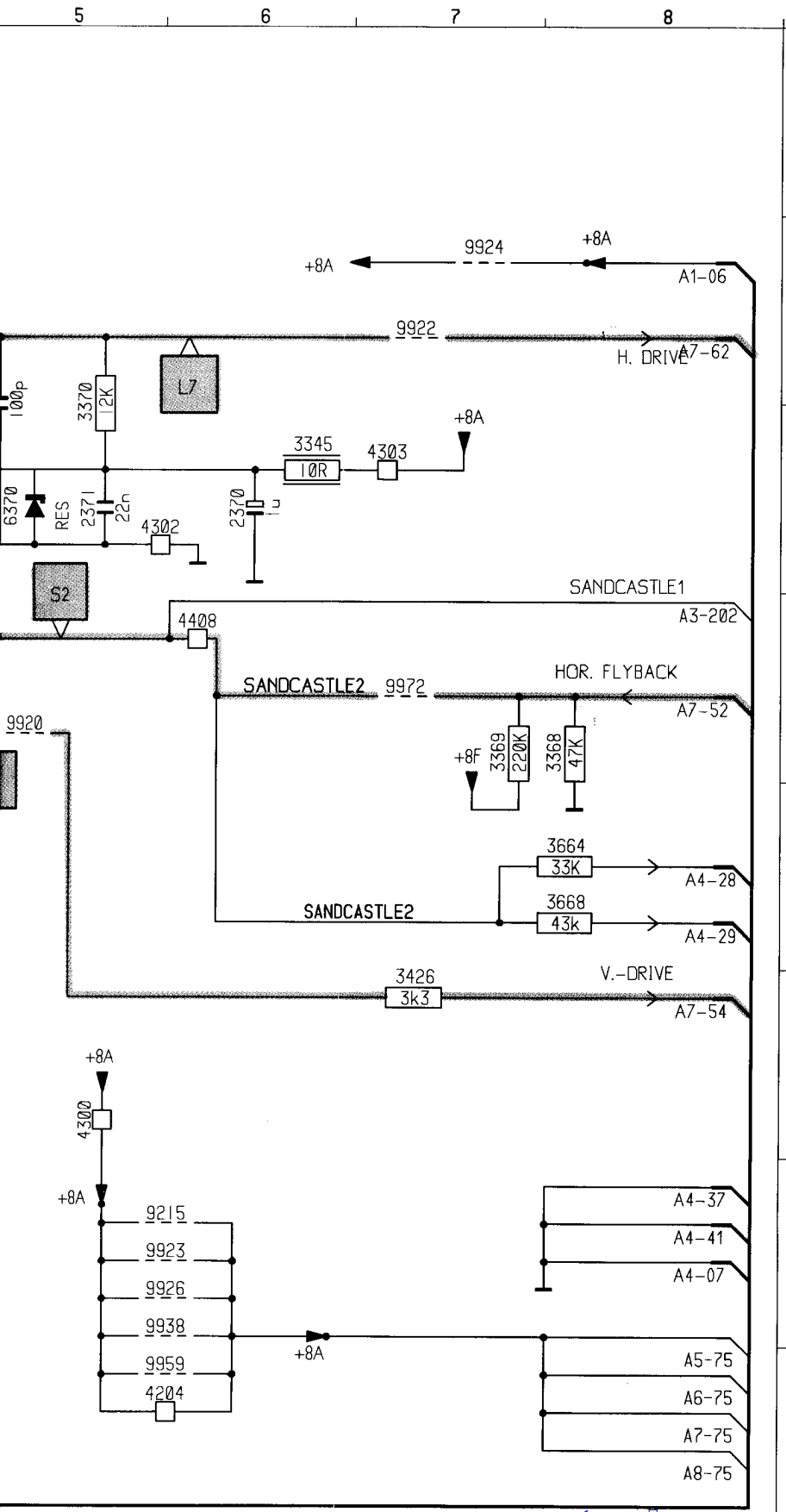


SCREEN SIZE		
ITEMS	4:3	16:9
3403	8K2	10K
3408	680	1K
3419	56	680



Synchronisation

1	9920	D 5	9938	G 6	A6-75	H 8	B-29	E 8	B-52	D 8
6	9922	B 7	9959	H 6	A7-75	H 8	B-37	G 8	B-54	F 8
4	9923	G 6	9972	D 7	A8-75	H 8	B-41	G 8	B-55	E 1
2	9924	B 7	A3-202	D 8	B-06	B 8	B-41	G 8	B-62	B 8
1	9926	G 6	A5-75	H 8	B-28	E 8	B-51	F 1	X2	B 2



C1 5V DC

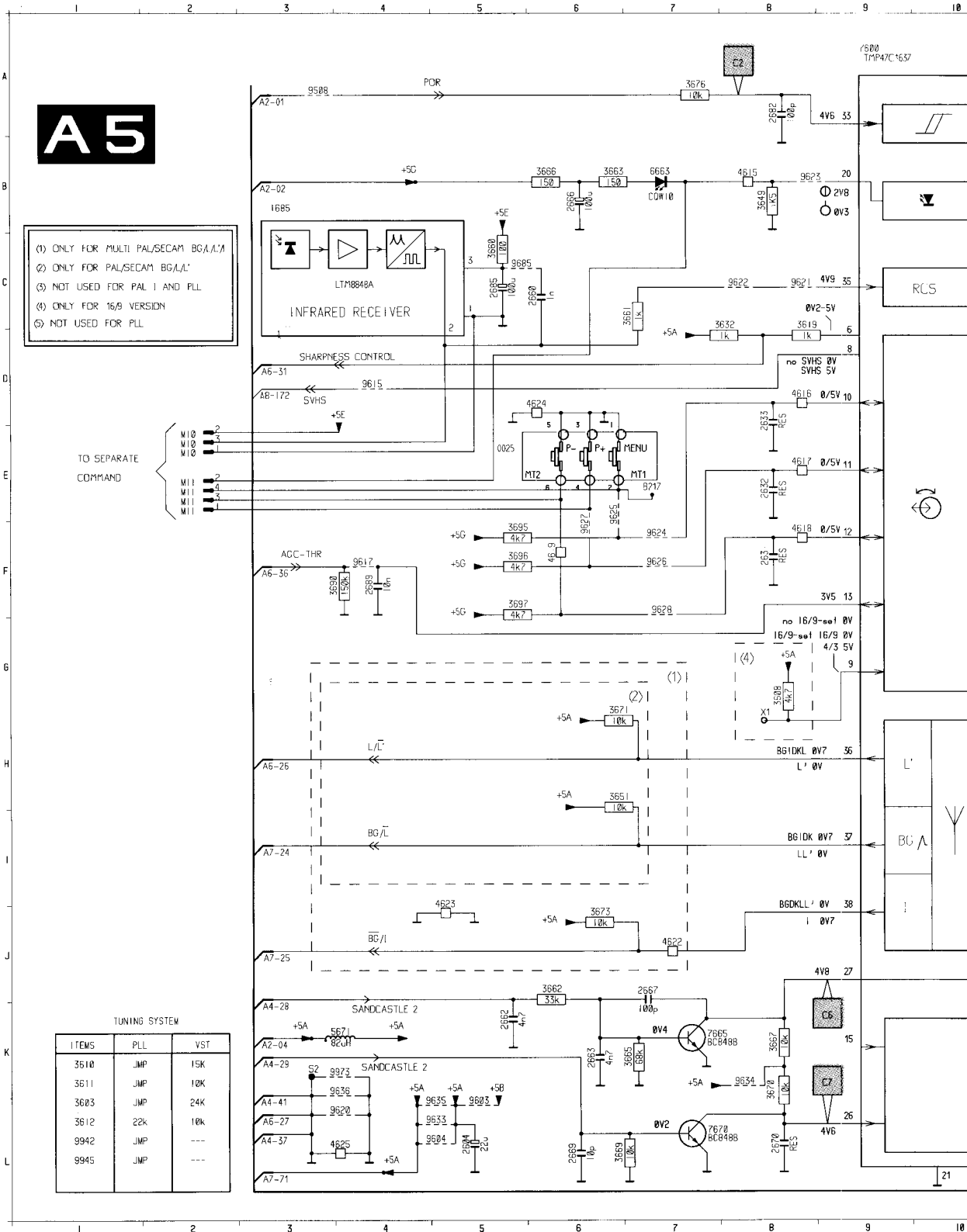
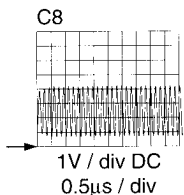
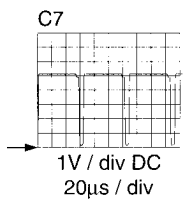
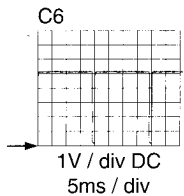
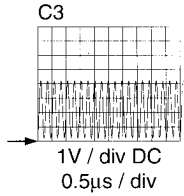
C2 4V6 DC

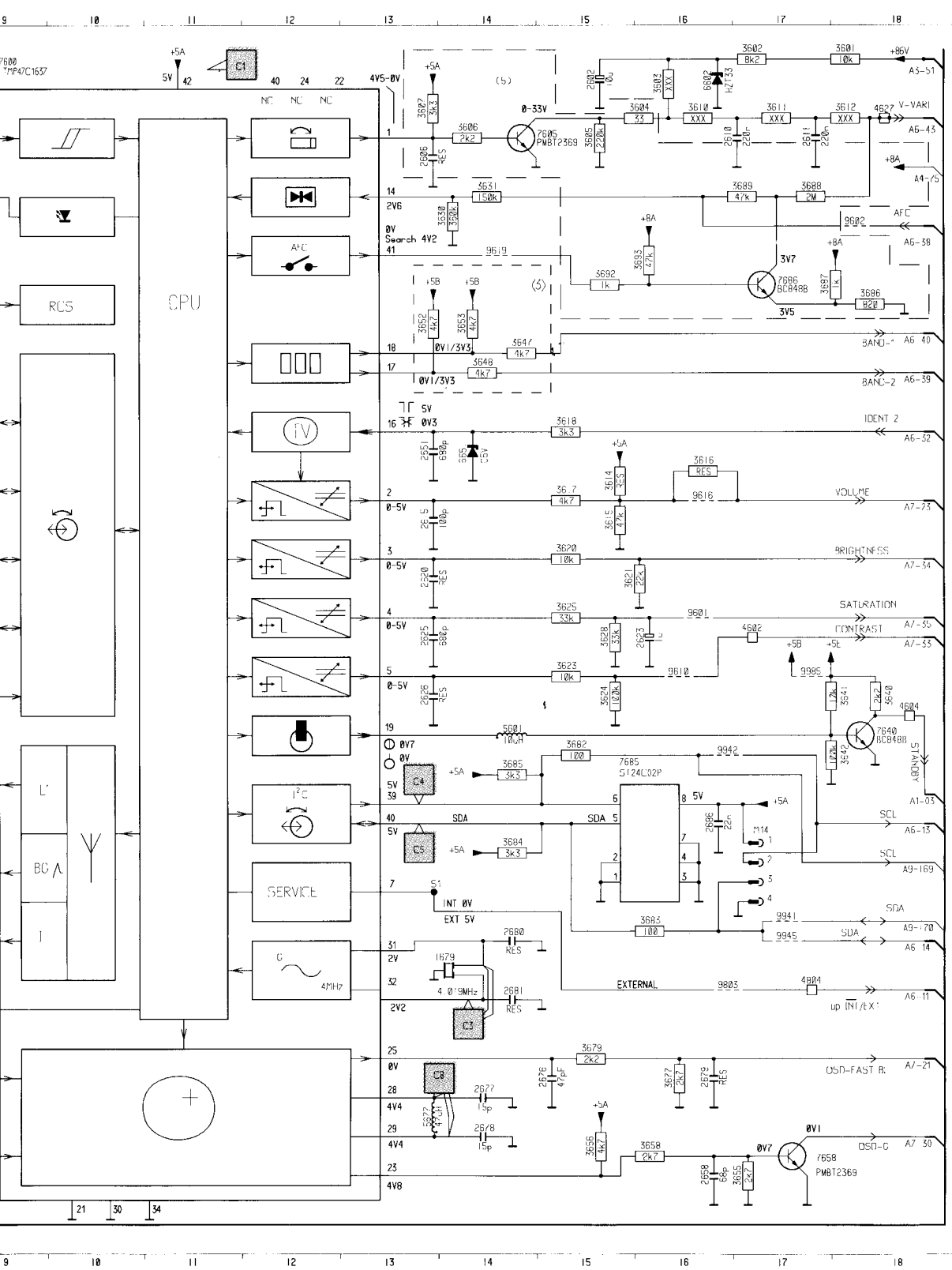
C4 5V DC

C5 5V DC

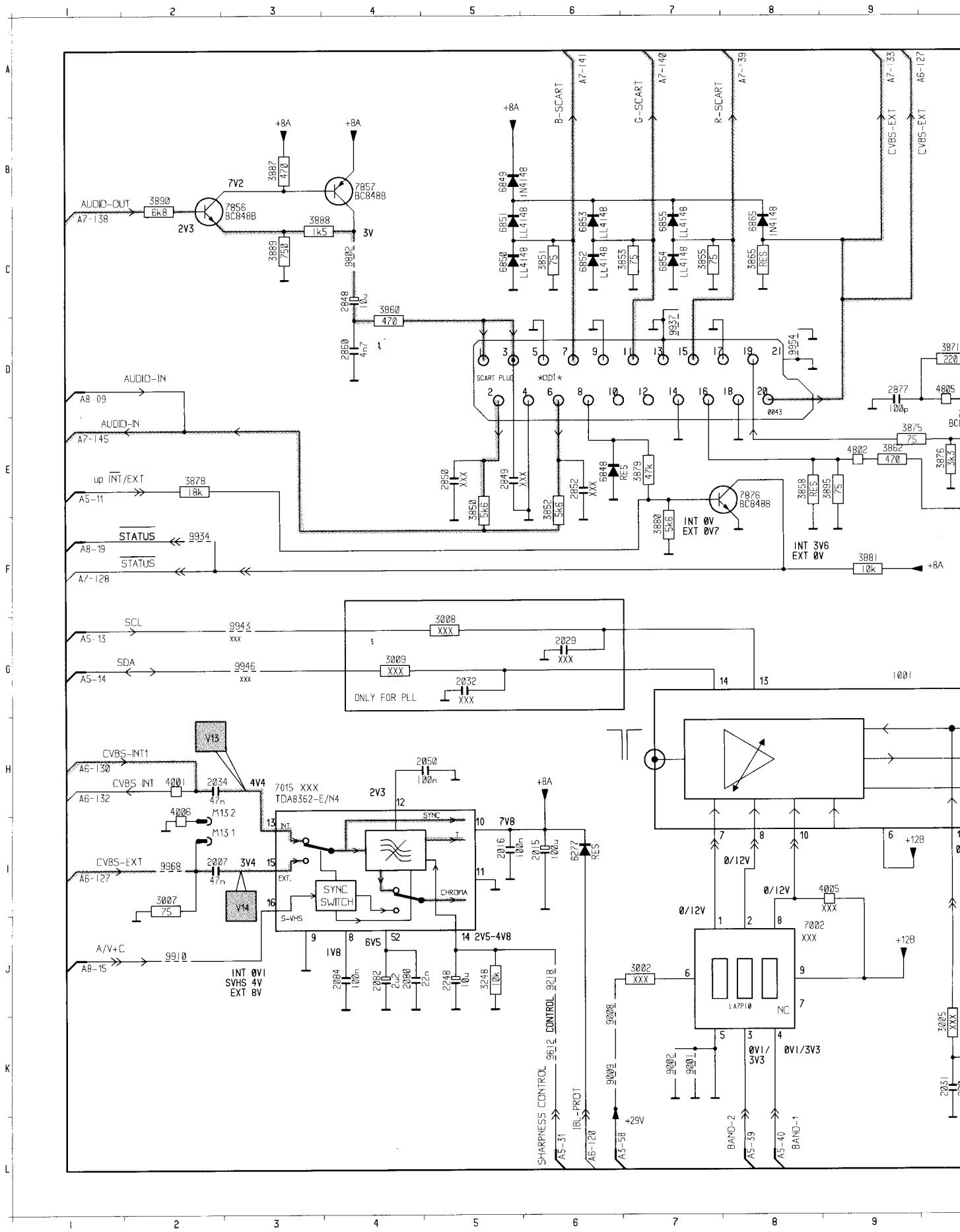
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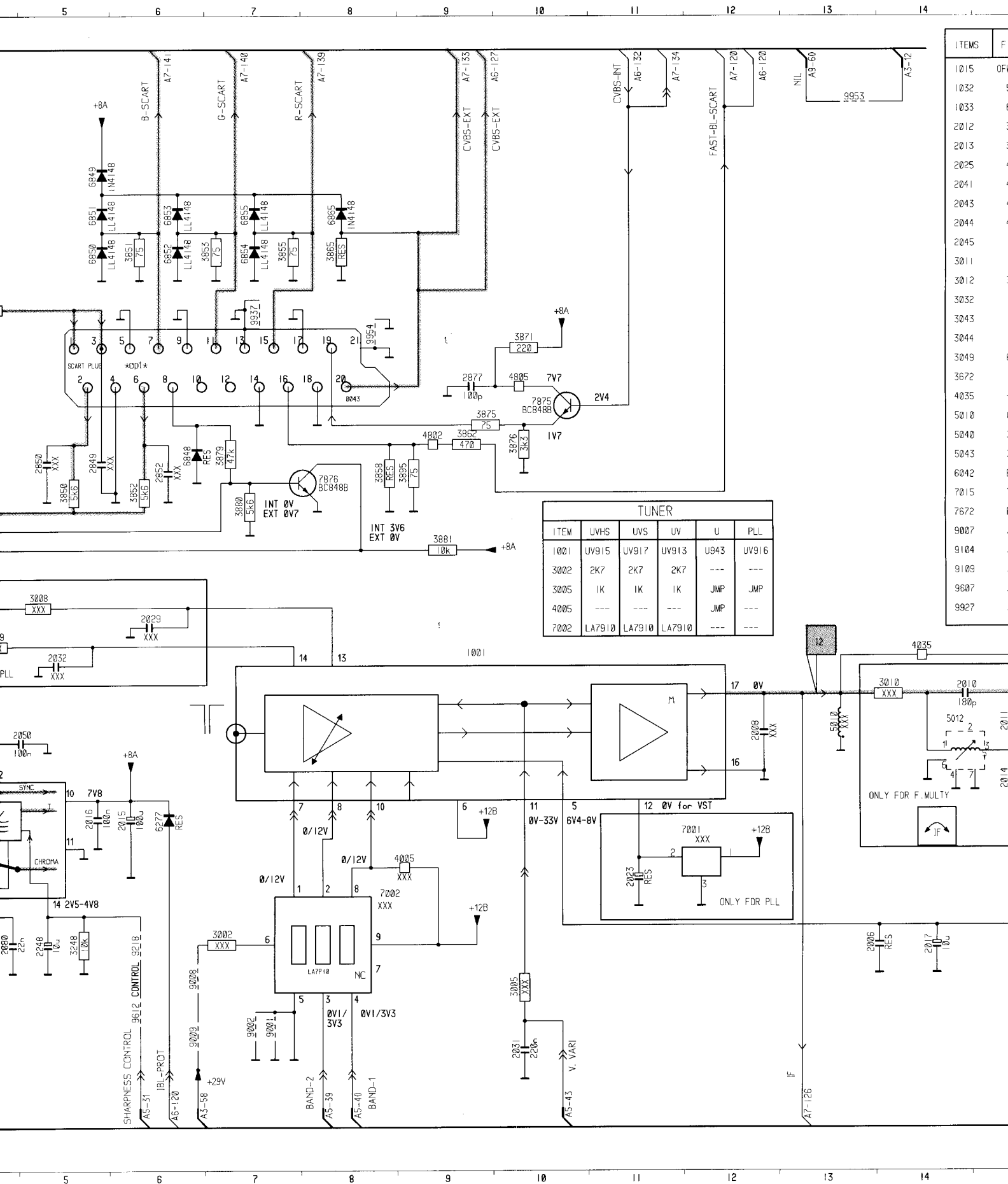
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- (2) ONLY FOR PAL/SECAM BG/L/L'
- (3) NOT USED FOR PAL I AND PLL
- (4) ONLY FOR 16/9 VERSION
- (5) NOT USED FOR PLL





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1879	K 4	9611	B16
1985	K 5	9612	B16
2004	L 5	9613	B16
2044	L 5	9614	B16
2066	L 5	9615	B16
2084	L 5	9616	B16
2100	L 5	9617	B16
2118	L 5	9618	B16
2135	L 5	9619	B16
2153	L 5	9620	B16
2171	L 5	9621	B16
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2207	L 5	9623	B16
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2243	L 5	9625	B16
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2315	L 5	9629	B16
2333	L 5	9630	B16
2351	L 5	9631	B16
2369	L 5	9632	B16
2387	L 5	9633	B16
2405	L 5	9634	B16
2423	L 5	9635	B16
2441	L 5	9636	B16
2459	L 5	9637	B16
2477	L 5	9638	B16
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2513	L 5	9640	B16
2531	L 5	9641	B16
2549	L 5	9642	B16
2567	L 5	9643	B16
2585	L 5	9644	B16
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2621	L 5	9646	B16
2639	L 5	9647	B16
2657	L 5	9648	B16
2675	L 5	9649	B16
2693	L 5	9650	B16
2711	L 5	9651	B16
2729	L 5	9652	B16
2747	L 5	9653	B16
2765	L 5	9654	B16
2783	L 5	9655	B16
2801	L 5	9656	B16
2819	L 5	9657	B16
2837	L 5	9658	B16
2855	L 5	9659	B16
2873	L 5	9660	B16
2891	L 5	9661	B16
2909	L 5	9662	B16
2927	L 5	9663	B16
2945	L 5	9664	B16
2963	L 5	9665	B16
2981	L 5	9666	B16
2999	L 5	9667	B16
3017	L 5	9668	B16
3035	L 5	9669	B16
3053	L 5	9670	B16
3071	L 5	9671	B16
3089	L 5	9672	B16
3107	L 5	9673	B16
3125	L 5	9674	B16
3143	L 5	9675	B16
3161	L 5	9676	B16
3179	L 5	9677	B16
3197	L 5	9678	B16
3215	L 5	9679	B16
3233	L 5	9680	B16
3251	L 5	9681	B16
3269	L 5	9682	B16
3287	L 5	9683	B16
3305	L 5	9684	B16
3323	L 5	9685	B16
3341	L 5	9686	B16
3359	L 5	9687	B16
3377	L 5	9688	B16
3395	L 5	9689	B16
3413	L 5	9690	B16
3431	L 5	9691	B16
3449	L 5	9692	B16
3467	L 5	9693	B16
3485	L 5	9694	B16
3503	L 5	9695	B16
3521	L 5	9696	B16
3539	L 5	9697	B16
3557	L 5	9698	B16
3575	L 5	9699	B16
3593	L 5	9700	B16
3611	L 5	9701	B16
3629	L 5	9702	B16
3647	L 5	9703	B16
3665	L 5	9704	B16
3683	L 5	9705	B16
3701	L 5	9706	B16
3719	L 5	9707	B16
3737	L 5	9708	B16
3755	L 5	9709	B16
3773	L 5	9710	B16
3791	L 5	9711	B16
3809	L 5	9712	B16
3827	L 5	9713	B16
3845	L 5	9714	B16
3863	L 5	9715	B16
3881	L 5	9716	B16
3899	L 5	9717	B16
3917	L 5	9718	B16
3935	L 5	9719	B16
3953	L 5	9720	B16
3971	L 5	9721	B16
3989	L 5	9722	B16
4007	L 5	9723	B16
4025	L 5	9724	B16
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4061	L 5	9726	B16
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4097	L 5	9728	B16
4115	L 5	9729	B16
4133	L 5	9730	B16
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4205	L 5	9734	B16
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4367	L 5	9743	B16
4385	L 5	9744	B16
4403	L 5	9745	B16
4421	L 5	9746	B16
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4457	L 5	9748	B16
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4493	L 5	9750	B16
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4547	L 5	9753	B16
4565	L 5	9754	B16
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4601	L 5	9756	B16
4619	L 5	9757	B16
4637	L 5	9758	B16
4655	L 5	9759	B16
4673	L 5	9760	B16
4691	L 5	9761	B16
4709	L 5	9762	B16
4727	L 5	9763	B16
4745	L 5	9764	B16
4763	L 5	9765	B16
4781	L 5	9766	B16
4799	L 5	9767	B16
4817	L 5	9768	B16
4835	L 5	9769	B16
4853	L 5	9770	B16
4871	L 5	9771	B16
4889	L 5	9772	B16
4907	L 5	9773	B16
4925	L 5	9774	B16
4943	L 5	9775	B16
4961	L 5	9776	B16
4979	L 5	9777	B16
4997	L 5	9778	B16
5015	L 5	9779	B16
5033	L 5	9780	B16
5051	L 5	9781	B16
5069	L 5	9782	B16
5087	L 5	9783	B16
5105	L 5	9784	B16
5123	L 5	9785	B16
5141	L 5	9786	B16
5159	L 5	9787	B16
5177	L 5	9788	B16
5195	L 5	9789	B16
5213	L 5	9790	B16
5231	L 5	9791	B16
5249	L 5	9792	B16
5267	L 5	9793	B16
5285	L 5	9794	B16
5303	L 5	9795	B16
5321	L 5	9796	B16
5339	L 5	9797	B16
5357	L 5	9798	B16
5375	L 5	9799	B16
5393	L 5	9800	B16
5411	L 5	9801	B16
5429	L 5	9802	B16
5447	L 5	9803	B16
5465	L 5	9804	B16
5483	L 5	9805	B16
5501	L 5	9806	B16
5519	L 5	9807	B16
5537	L 5	9808	B16
5555	L 5	9809	B16
5573	L 5	9810	B16
5591	L 5	9811	B16
5609	L 5	9812	B16
5627	L 5	9813	B16
5645	L 5	9814	B16
5663	L 5	9815	B16
5681	L 5	9816	B16
5699	L 5	9817	B16
5717	L 5	9818	B16
5735	L 5	9819	B16
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5771	L 5	9821	B16
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5807	L 5	9823	B16
5825	L 5	9824	B16
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5897	L 5	9828	B16
5915	L 5	9829	B16
5933	L 5	9830	B16
5951	L 5	9831	B16
5969	L 5	9832	B16
5987	L 5	9833	B16
6005	L 5	9834	B16
6023	L 5	9835	B16
6041	L 5	9836	B16
6059	L 5	9837	B16
6077	L 5	9838	B16
6095	L 5	9839	B16
6113	L 5	9840	B16
6131	L 5	9841	B16
6149	L 5	9842	B16
6167	L 5	9843	B16
6185	L 5	9844	B16
6203	L 5	9845	B16
6221	L 5	9846	B16
6239	L 5	9847	B16
6257	L 5	9848	B16
6275	L 5	9849	B16
6293	L 5	9850	B16
6311	L 5	9851	B16
6329	L 5	9852	B16
6347	L 5	9853	B16
6365	L 5	9854	B16
6383	L 5	9855	B16
6401	L 5	9856	B16
6419	L 5	9857	B16
6437	L 5	9858	B16
6455	L 5	9859	B16
6473	L 5	9860	B16
6491	L 5	9861	B16
6509	L 5	9862	B16
6527	L 5	9863	B16
6545	L 5	9864	B16
6563	L 5	9865	B16
6581	L 5	9866	B16
6599	L 5	9867	B16
6617	L 5	9868	B16
6635	L 5	9869	B16
6653	L 5	9870	B16
6671	L 5	9871	B16
6689	L 5	9872	B16
6707	L 5	9873	B16
6725	L 5	9874	B16
6743	L 5	9875	B16
6761	L 5	9876	B16
6779	L 5	9877	B16
6797	L 5	9878	B16
6815	L 5	9879	B16
6833	L 5	9880	B16
6851	L 5	9881	B16
6869	L 5	9882	B16
6887	L 5	9883	B16
6905	L 5	9884	B16
6923	L 5	9885	B16
6941	L 5	9886	B16
6959	L 5	9887	B16
6977	L 5	9888	B16
6995	L 5	9889	B16
7013	L 5	9890	B16
7031	L 5	9891	B16
7049	L 5	9892	B16
7067	L 5	9893	B16
7085	L 5	9894	B16
7103	L 5	9895	B16
7121	L 5	9896	B16
7139	L 5	9897	B16
7157	L 5	9898	B16
7175	L 5	9899	B16
7193	L 5	9900	B16





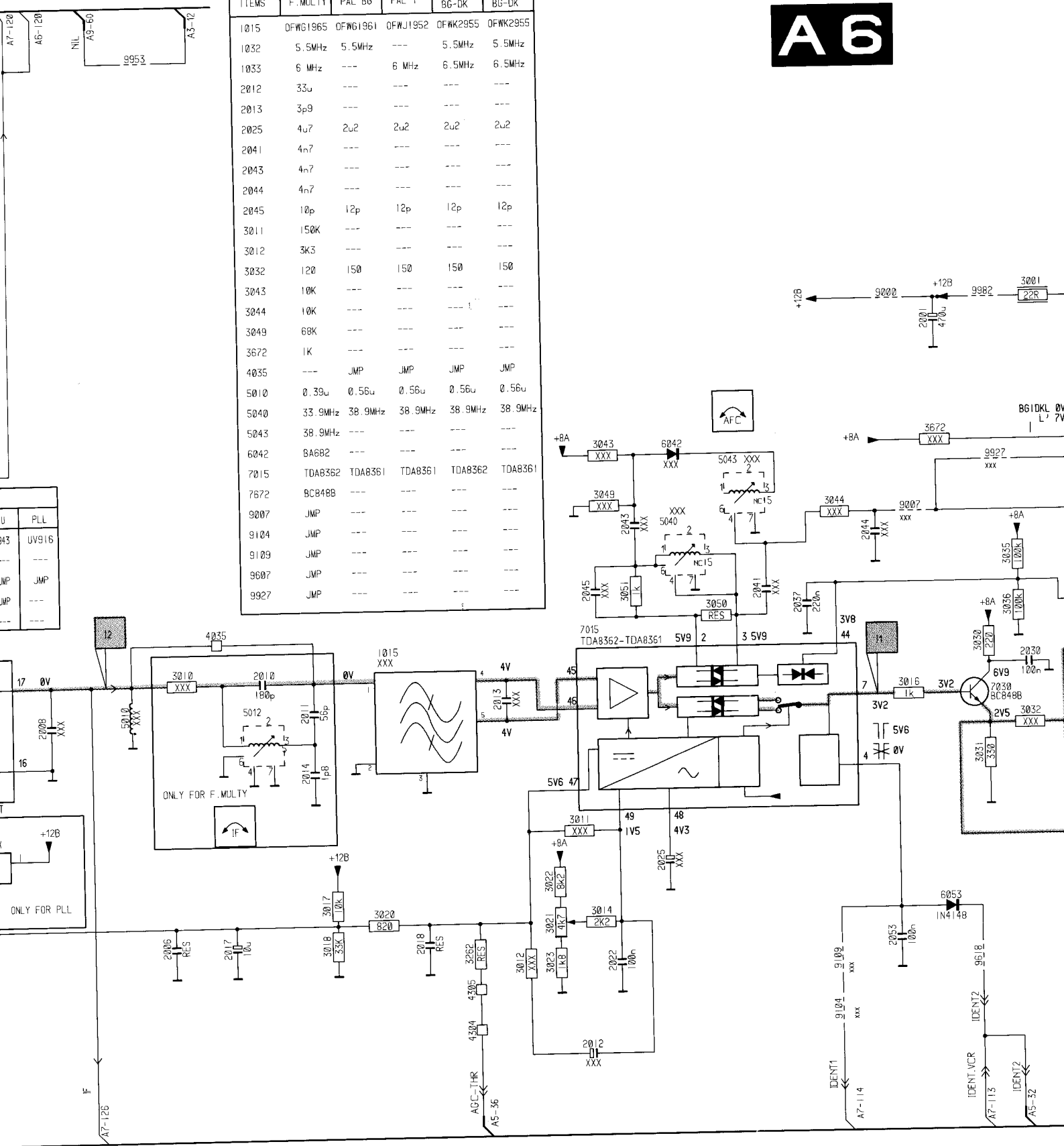
TUNER					
ITEM	UVHS	UVS	UV	U	PLL
1001	UV915	UV917	UV913	U943	UV916
3002	2K7	2K7	2K7	---	---
3005	1K	1K	1K	JMP	JMP
4005	---	---	---	JMP	---
7002	LA7910	LA7910	LA7910	---	---

ITEMS	F.
1015	OF
1032	5
1033	6
2012	3
2013	3
2025	4
2041	4
2043	4
2044	4
2045	1
3011	1
3012	3
3032	1
3043	1
3049	6
3672	1
4035	1
5010	0
5040	3
5043	3
6042	8
7015	1
7672	6
9007	1
9104	1
9109	1
9607	1
9927	1

12 13 14 15 16 17 18 19 20 21 22

A6

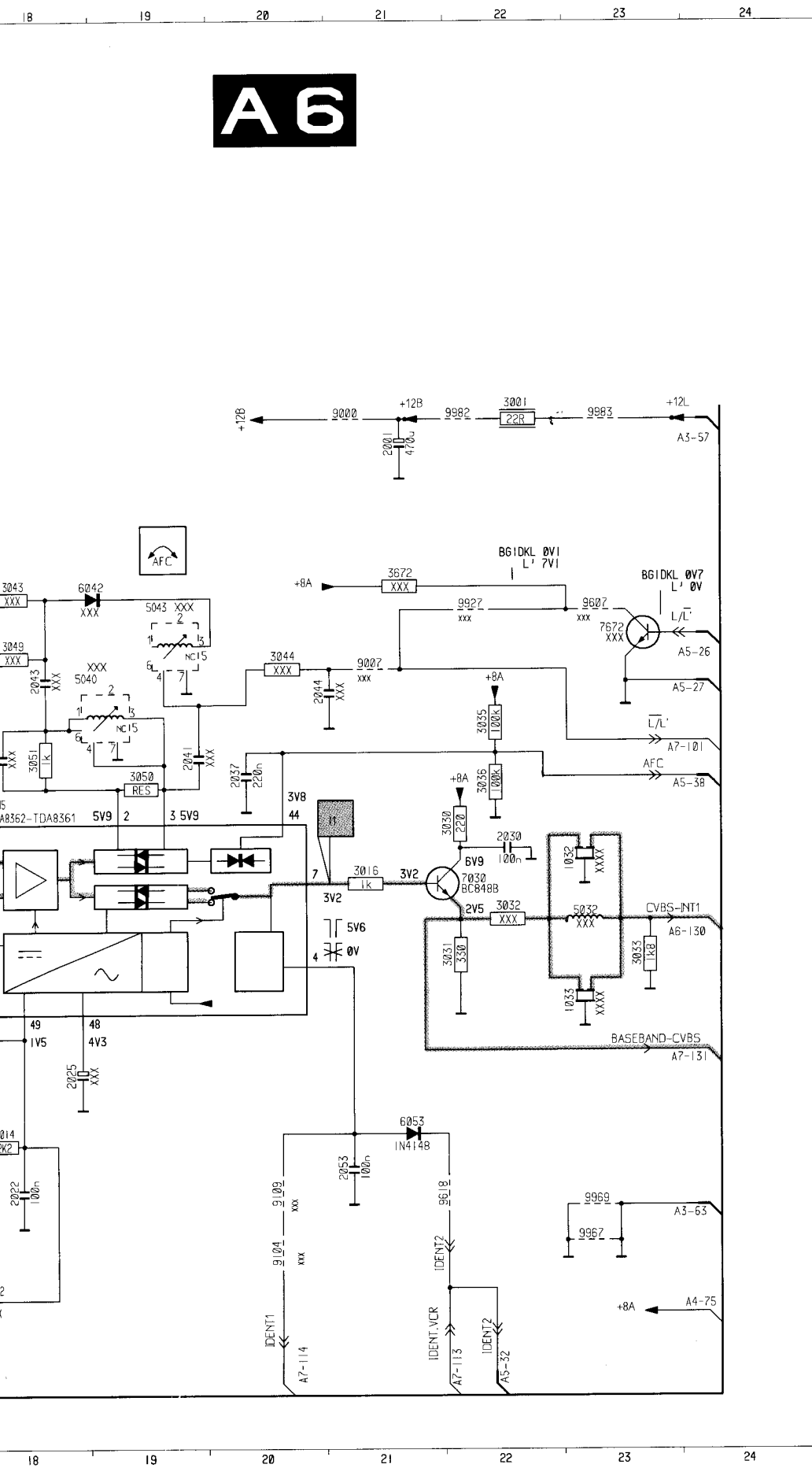
ITEMS	F. MULTY	PAL BG	PAL I	PAL /S BG-DK	PAL BG-DK
1015	DFWG1965	DFWG1961	DFWJ1952	DFWK2955	DFWK2955
1032	5.5MHz	5.5MHz	---	5.5MHz	5.5MHz
1033	6 MHz	---	6 MHz	6.5MHz	6.5MHz
2012	33u	---	---	---	---
2013	3p9	---	---	---	---
2025	4u7	2u2	2u2	2u2	2u2
2041	4n7	---	---	---	---
2043	4n7	---	---	---	---
2044	4n7	---	---	---	---
2045	10p	12p	12p	12p	12p
3011	150K	---	---	---	---
3012	3K3	---	---	---	---
3032	120	150	150	150	150
3043	10K	---	---	---	---
3044	10K	---	---	---	---
3049	68K	---	---	---	---
3672	1K	---	---	---	---
4035	---	JMP	JMP	JMP	JMP
5010	0.38u	0.56u	0.56u	0.56u	0.56u
5040	33.9MHz	38.9MHz	38.9MHz	38.9MHz	38.9MHz
5043	38.9MHz	---	---	---	---
6042	BA682	---	---	---	---
7015	TDA8362	TDA8361	TDA8361	TDA8362	TDA8361
7872	BC848B	---	---	---	---
9007	JMP	---	---	---	---
9104	JMP	---	---	---	---
9109	JMP	---	---	---	---
9607	JMP	---	---	---	---
9927	JMP	---	---	---	---



12 13 14 15 16 17 18 19 20 21 22

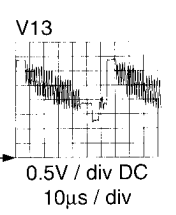
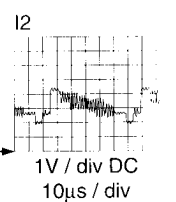
Tuner + FI + Connexions

A6

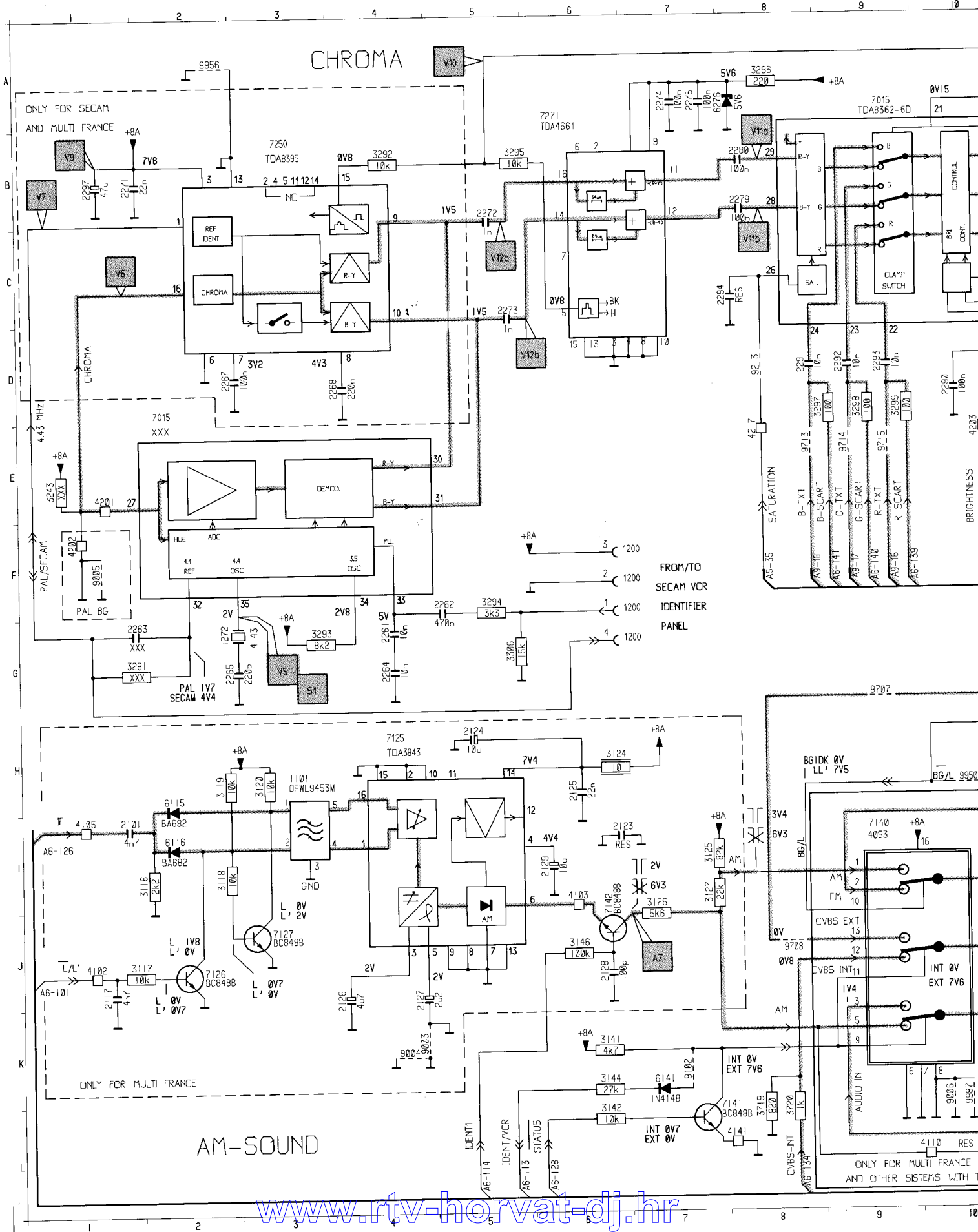


0043	D 8	7875	E10
1001	G 9	7876	F 8
1015	G17	9000	D21
1032	H23	9001	K 7
1033	I23	9002	K 7
2001	D21	9007	F21
2006	J13	9008	J 6
2007	I 2	9009	K 6
2008	H12	9104	K20
2010	G14	9109	J20
2011	H15	9218	J 6
2012	K16	9507	E23
2013	H17	9612	K 6
2014	H15	9618	J22
2015	I 6	9802	C 4
2016	I 5	9910	J 2
2017	J14	9927	E22
2018	J16	9934	F 2
2022	J18	9937	D 7
2023	I11	9943	G 3
2025	I18	9946	G 3
2029	G 6	9953	A13
2030	G22	9954	D 8
2031	K10	9967	K23
2032	G 5	9968	I 2
2034	H 2	9969	J23
2037	G20	9983	D22
2041	G19	9983	D27
2043	F18	A4-75	K24
2044	F20	A6-120	L 6
2045	G18	A6-120	A12
2050	H 5	A6-127	I 1
2053	J21	A6-127	A10
2060	J 4	A6-130	H 1
2082	J 4	A6-130	H24
2084	J 4	A6-132	A11
2248	C 6	A7-101	G24
2348	C 6	A7-101	G24
2849	E 5	A7-113	L22
2850	E 5	A7-114	L20
2852	E 6	A7-120	A12
2860	D 4	A7-126	L13
2877	D 9	A7-128	F 1
3001	D22	A7-131	I24
3002	J 7	A7-133	A 9
3005	K10	A7-134	A 9
3007	I 2	A7-138	C 1
3008	G 5	A7-139	A 8
3009	G 4	A7-140	A 7
3010	G14	A7-141	A 6
3011	I18	A7-145	E 1
3012	J17	B-09	D 1
3014	J18	B-11	E 1
3016	J18	B-12	A14
3017	J15	B-15	G 1
3018	J15	B-14	G 1
3020	J16	B-15	J 1
3021	J17	B-19	F 1
3022	J17	B-26	F24
3023	J17	B-27	F24
3030	G22	B-31	L 6
3031	H23	B-32	L22
3032	H23	B-36	L17
3033	H23	B-38	G24
3035	F22	B-39	L 8
3036	G22	B-40	L 8
3043	E18	B-43	L10
3044	F20	B-57	D24
3049	F18	B-58	L 6
3050	G19	B-60	A13
3051	G18	B-65	K24
3248	J 5	M13	I 2
3262	J16	M13	H 2
3672	E21		
3850	E 5		
3851	F 6		
3852	F 6		
3853	F 6		
3855	F 6		
3856	F 6		
3880	A 4		
3882	A 4		
3885	A 8		
3871	D10		
3875	E 8		
3876	E 8		
3878	F 7		
3879	F 7		
3880	F 7		
3881	F 7		
3882	F 7		
3888	C 3		
3889	C 3		
3890	F 9		
3895	F 9		
4001	H 3		
4005	I 9		
4006	H 3		
4035	G14		
4304	K16		
4305	K16		
4002	E 9		
4005	D10		
5010	H13		
5013	H14		
5033	H23		
5040	F18		
5043	E19		
6042	E19		
6053	J21		
6277	I 6		
6848	F 6		
6849	F 6		
6850	F 6		
6851	F 6		
6852	F 6		
6853	C 6		
6854	C 7		
6855	C 8		
6865	C 8		
7001	I11		
7002	J 8		
7015	H 3		
7015	G18		
7030	H22		
7672	F23		
7856	B 3		
7857	B 4		

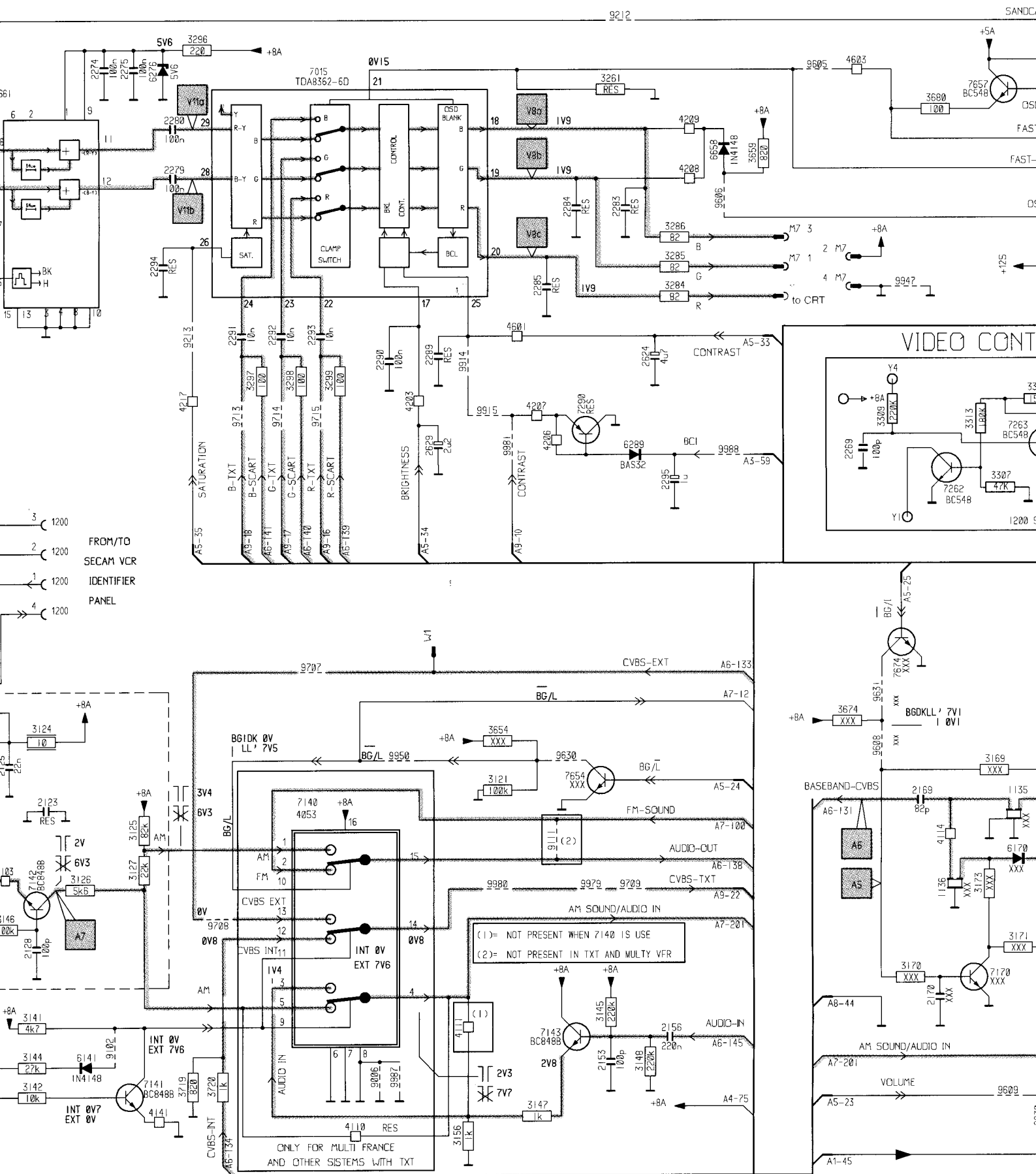
I1 V_{PP} = 300mV



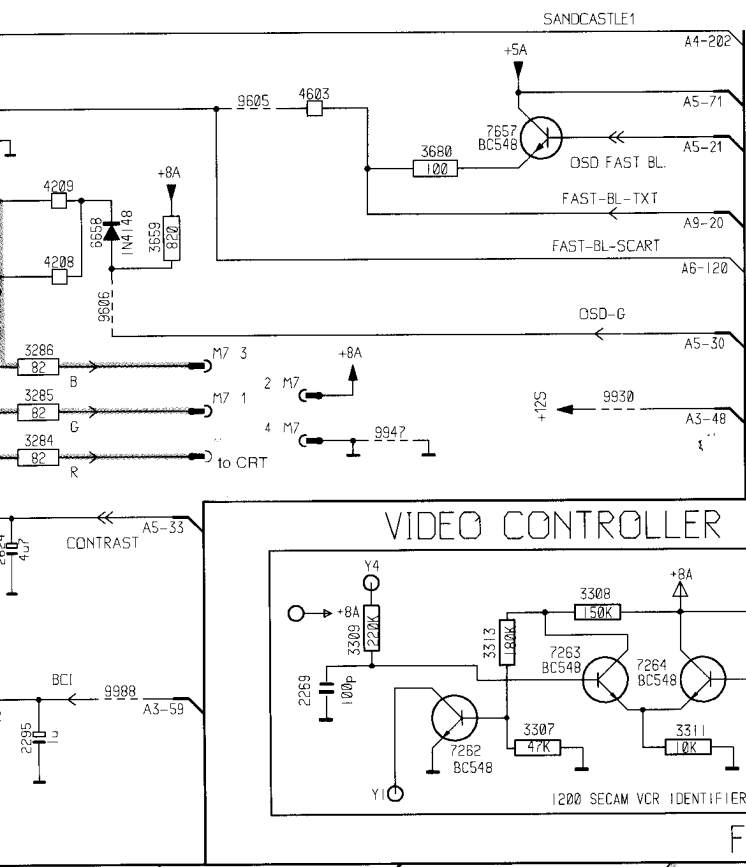
V14 (No signal)



Video + sound / Ton / Son

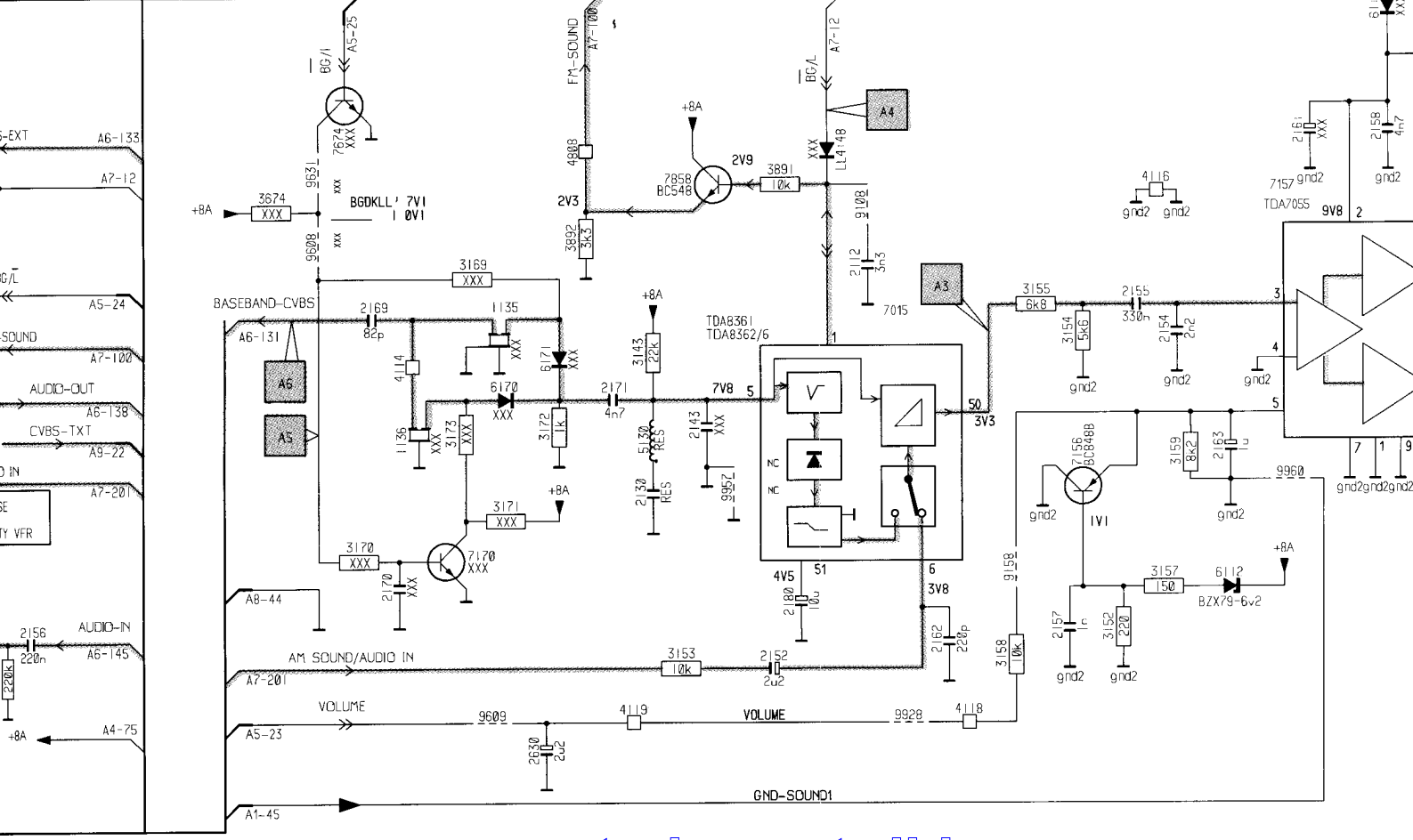


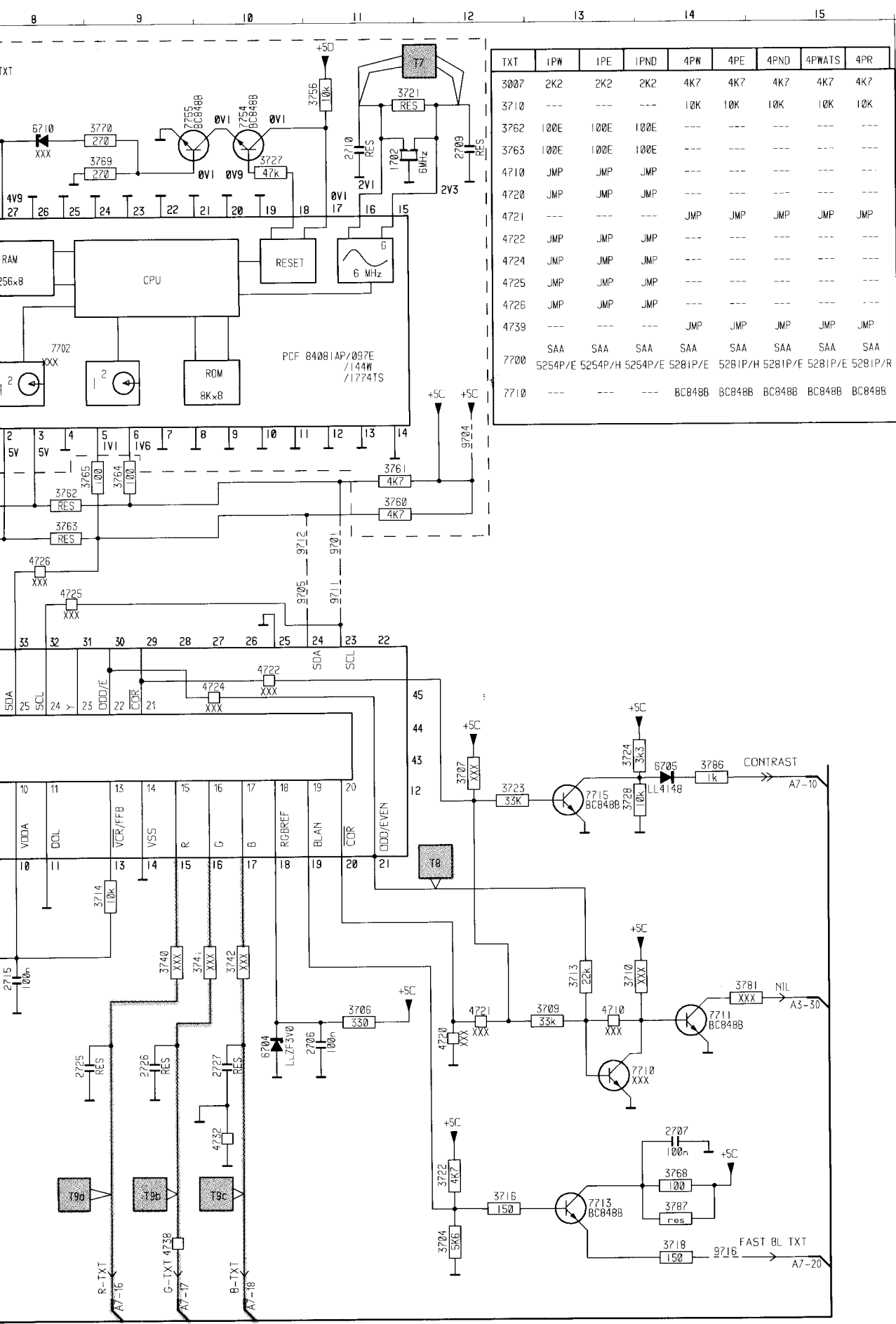
13 14 15 16 17 18 19 20 21 22 23



SYSTEM

ITEMS	FULL MULTY	PAL BG	PAL I	PAL/S BG/DK	PAL BG/DK
1135	5.5 MHz	5.5 MHz	6 MHz	5.5 MHz	5.5 MHz
1136	6MHz	---	---	6.5 MHz	6.5 MHz
1200	PRESENT	---	---	PRESENT	---
2170	10n	---	---	---	---
2263	22n	---	---	22n	---
3169	10K	---	---	---	---
3170	10K	---	---	---	---
3171	2K2	---	---	---	---
3173	10K	---	---	---	---
3243	10K	---	---	10K	---
3291	5K6	---	---	5K6	---
3294	3K3	18K	10K	3K3	18K
3306	15K	JMP	JMP	15K	JMP
3654	1K	---	---	---	---
3674	1K	---	---	---	---
4114	JMP	---	---	JMP	JMP
6128	LL4148	---	---	---	---
6170	BA682	JMP	JMP	JMP	JMP
6171	BA682	JMP	JMP	JMP	JMP
7015	TDA8362	TDA8361	TDA8361	TDA8362	TDA8361
7170	BC848B	---	---	---	---
7654	BC848B	---	---	---	---
7674	BC848B	---	---	---	---
9608	JMP	---	---	---	---
9630	JMP	---	---	---	---
9631	JMP	---	---	---	---

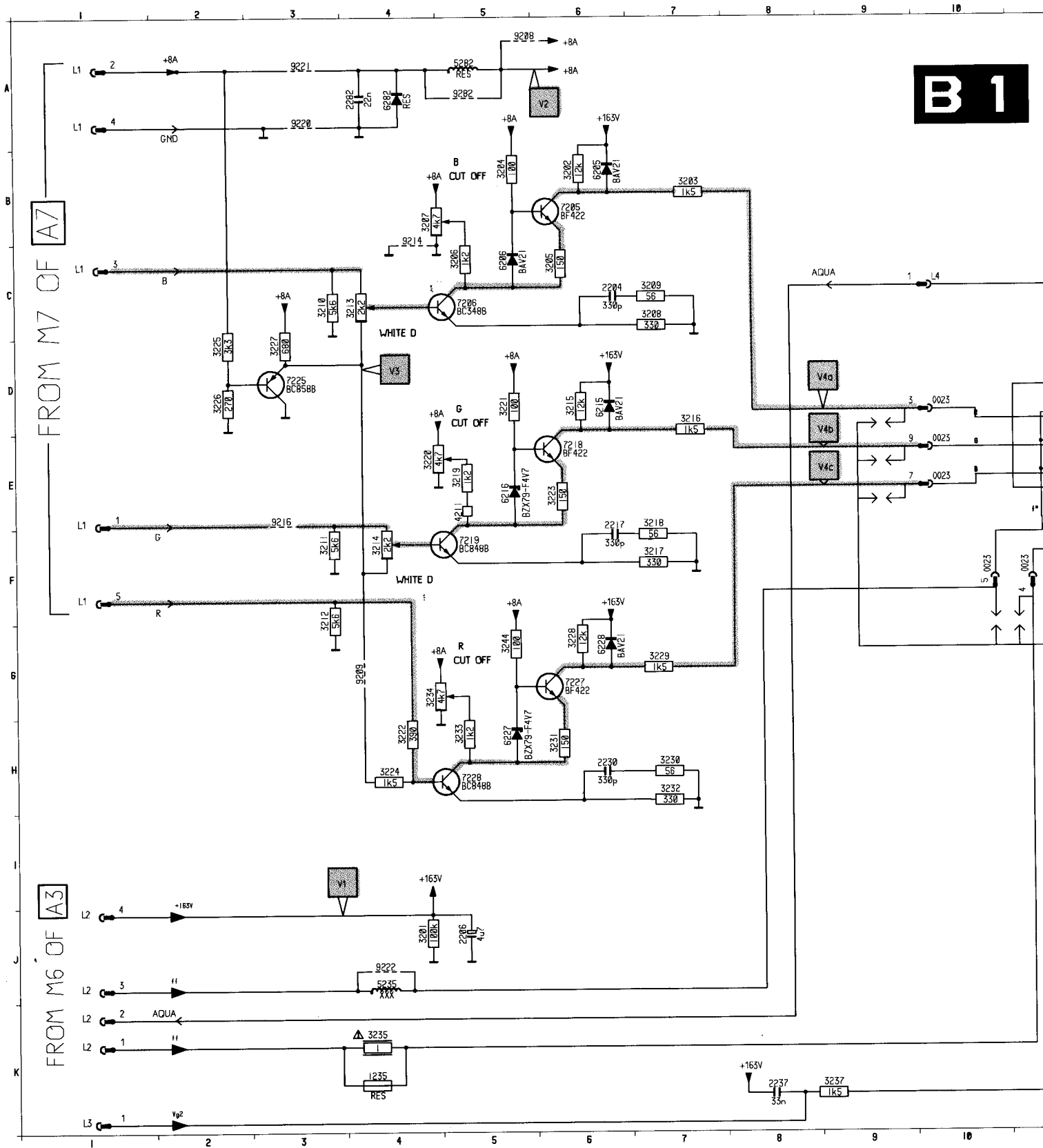


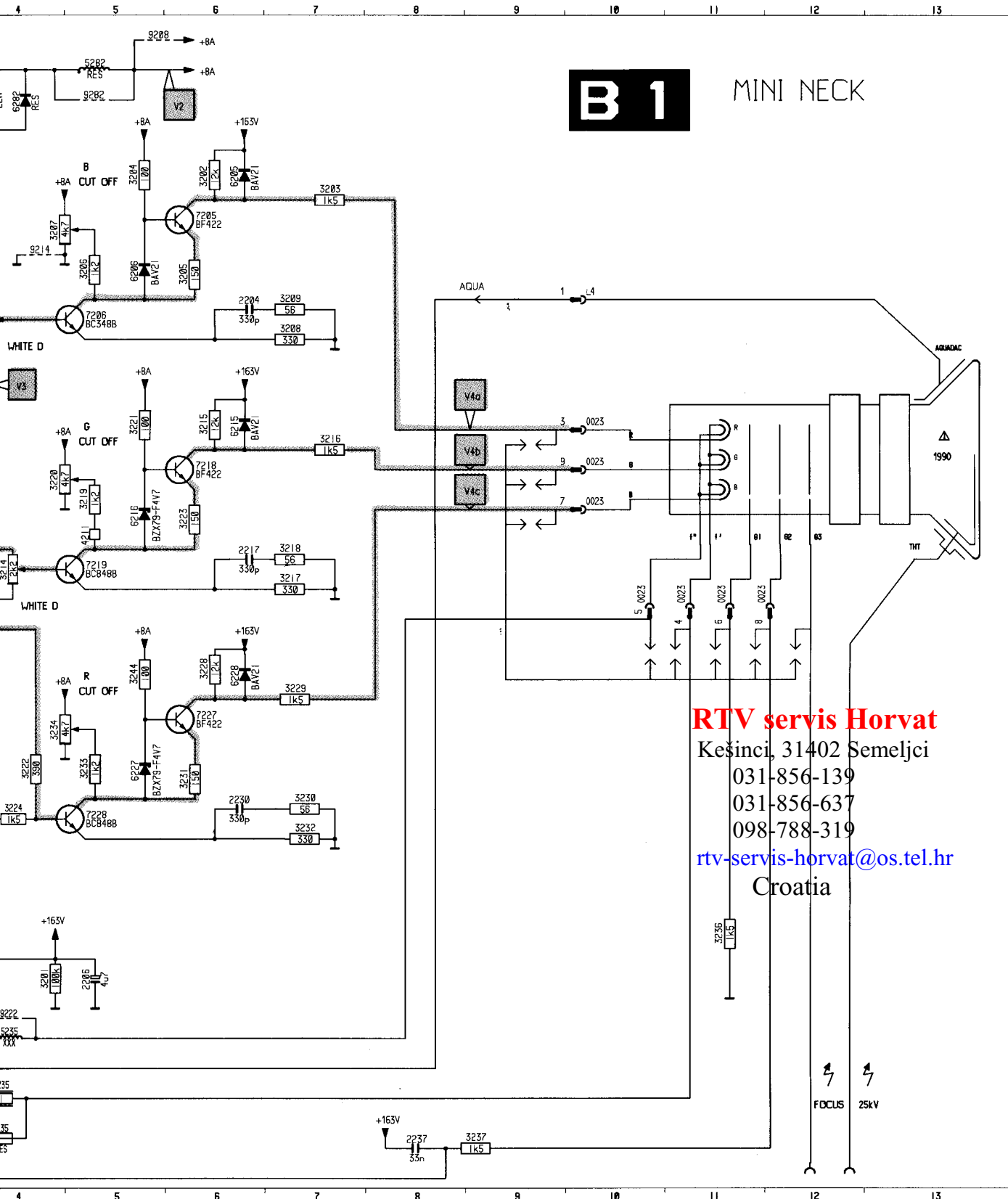


TXT	IPW	IPE	IPND	4PW	4PE	4PND	4PWATS	4PR
3007	2K2	2K2	2K2	4K7	4K7	4K7	4K7	4K7
3710	---	---	---	10K	10K	10K	10K	10K
3762	100E	100E	100E	---	---	---	---	---
3763	100E	100E	100E	---	---	---	---	---
4710	JMP	JMP	JMP	---	---	---	---	---
4720	JMP	JMP	JMP	---	---	---	---	---
4721	---	---	---	JMP	JMP	JMP	JMP	JMP
4722	JMP	JMP	JMP	---	---	---	---	---
4724	JMP	JMP	JMP	---	---	---	---	---
4725	JMP	JMP	JMP	---	---	---	---	---
4726	JMP	JMP	JMP	---	---	---	---	---
4739	---	---	---	JMP	JMP	JMP	JMP	JMP
7700	SAA	SAA	SAA	SAA	SAA	SAA	SAA	SAA
	5254P/E	5254P/H	5254P/E	5281P/E	5281P/H	5281P/E	5281P/E	5281P/R
7710	---	---	---	BC848B	BC848B	BC848B	BC848B	BC848B

1701 I 6
 1702 B11
 1710 B2
 2701 H5
 2702 I5
 2703 I5
 2704 I7
 2705 H7
 2706 J11
 2707 K14
 2709 B12
 2710 B11
 2711 I6
 2712 H4
 2713 I5
 2715 I8
 2716 B7
 2725 J8
 2726 J9
 2727 J10
 2732 J6
 2734 J4
 2736 C4
 2752 C6
 2771 I2
 2772 I7
 3702 J5
 3704 K12
 3705 H7
 3706 I11
 3707 G12
 3709 I13
 3710 I13
 3713 I19
 3716 K12
 3718 L14
 3721 A11
 3722 K12
 3723 G12
 3724 G13
 3725 D3
 3727 B10
 3728 G13
 3729 J5
 3731 J4
 3732 J3
 3733 J3
 3734 K4
 3735 L4
 3736 I3
 3737 I2
 3738 J3
 3740 I9
 3741 I10
 3742 I10
 3749 B3
 3750 C3
 3751 B3
 3752 B3
 3756 A11
 3757 C3
 3760 E11
 3761 E11
 3762 E11
 3763 E11
 3764 E11
 3765 E11
 3768 K14
 3769 B9
 3770 A9
 3781 I14
 3786 X14
 3788 B2
 4710 I13
 4720 J12
 4721 I12
 4722 F10
 4724 F10
 4725 F8
 4726 E8
 4732 K10
 4738 K9
 4739 B6
 5701 I7
 5704 I7
 5734 K4
 5747 A7
 5752 K2
 6704 J10
 6705 G14
 6710 A8
 6750 D3
 6751 C5
 7700 F6
 7702 L3
 7710 I14
 7711 I14
 7713 K13
 7715 G13
 7731 I4
 7732 I3
 7750 B3
 7751 B5
 7754 A10
 7755 A9
 9701 E11
 9702 A6
 9704 D12
 9705 F10
 9710 I1
 9711 F11
 9712 E10
 9716 L14
 9944 E6
 9978 K2
 A5-169 E
 A5-170 E
 C-05 K1
 C-10 G15
 C-12 I15
 C-16 L19
 C-17 L9
 C-18 L10
 C-20 L15
 C-22 J1
 C-50 C1

B 1



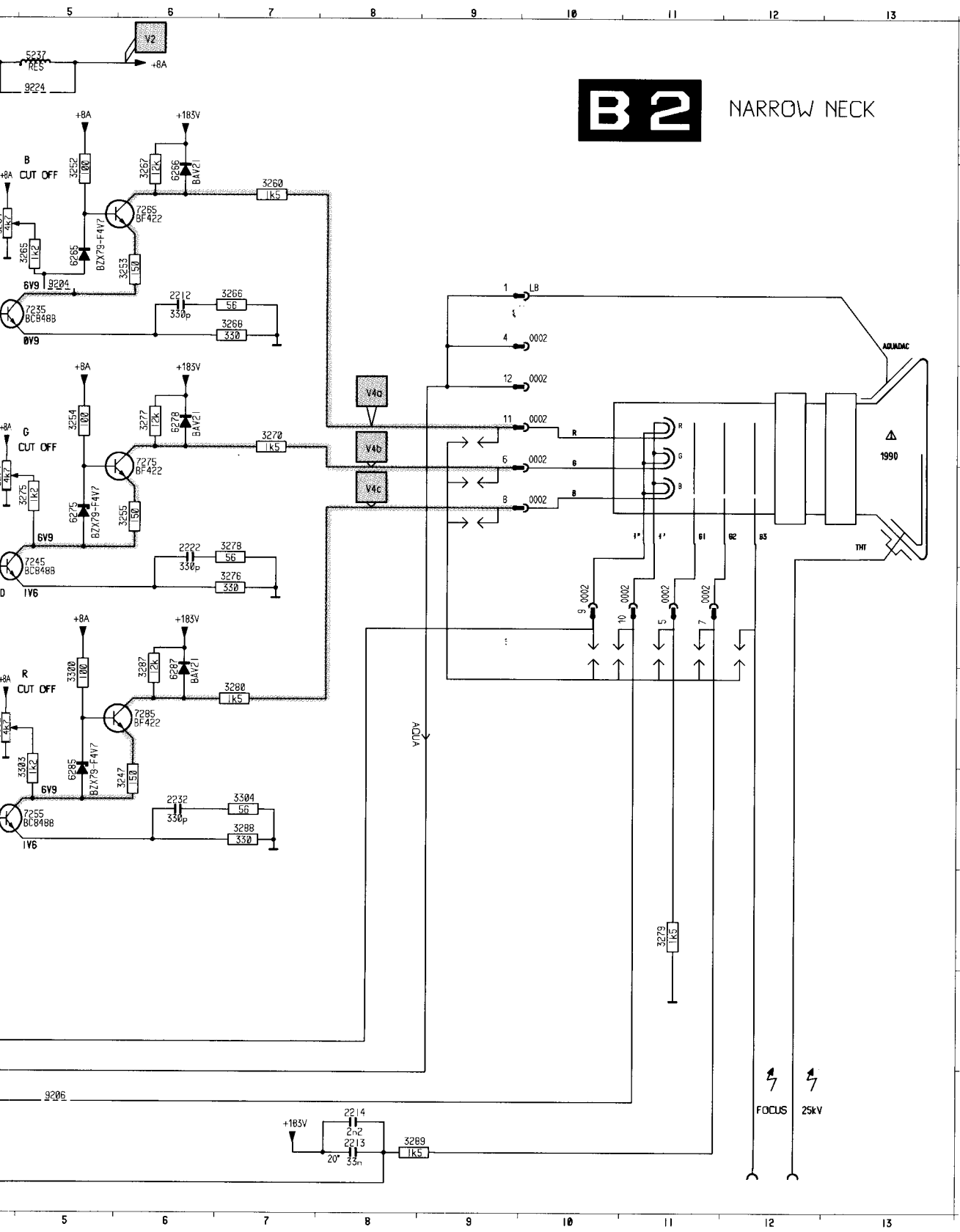


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0023	E100

RTV servis Horvat
 Kešinci, 31402 Semeljci
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 Croatia

20-21" Narrow neck CRT panel / Bildröhren Platte / Platine TRC

20-2



B2 NARROW NECK

0002	E18
0002	D18
0002	D18
0002	D18
0002	C18
0002	F18
0002	F11
0002	F11
0002	F11
1236	K44
2209	A44
2210	L33
2212	L33
2215	K33
2214	K33
2222	G33
2232	H33
2232	H33
2238	J33
2239	J33
2240	J33
2241	J33
2242	J33
2243	J33
2244	J33
2245	J33
2246	J33
2247	J33
2248	J33
2249	J33
2250	J33
2251	J33
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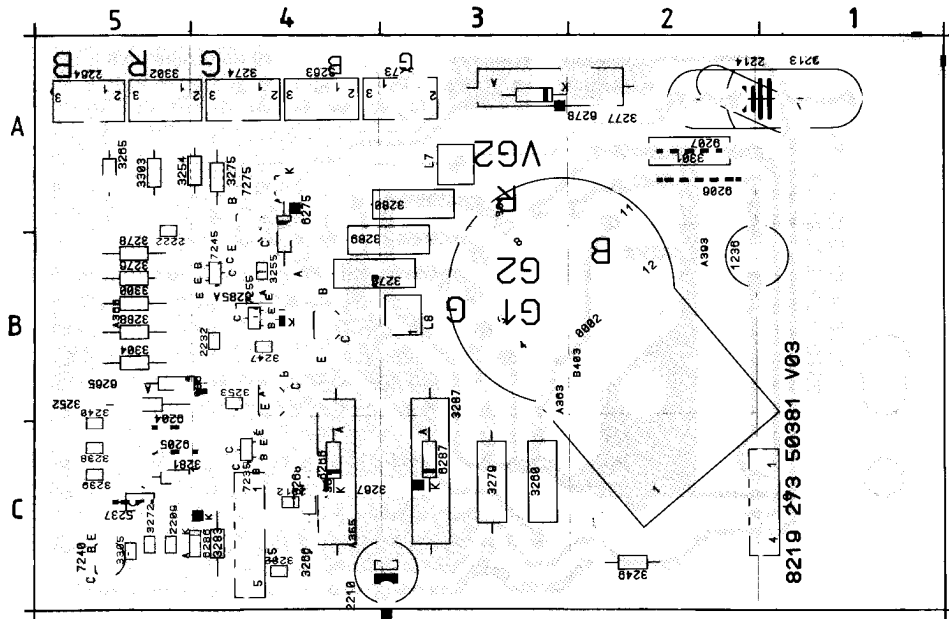
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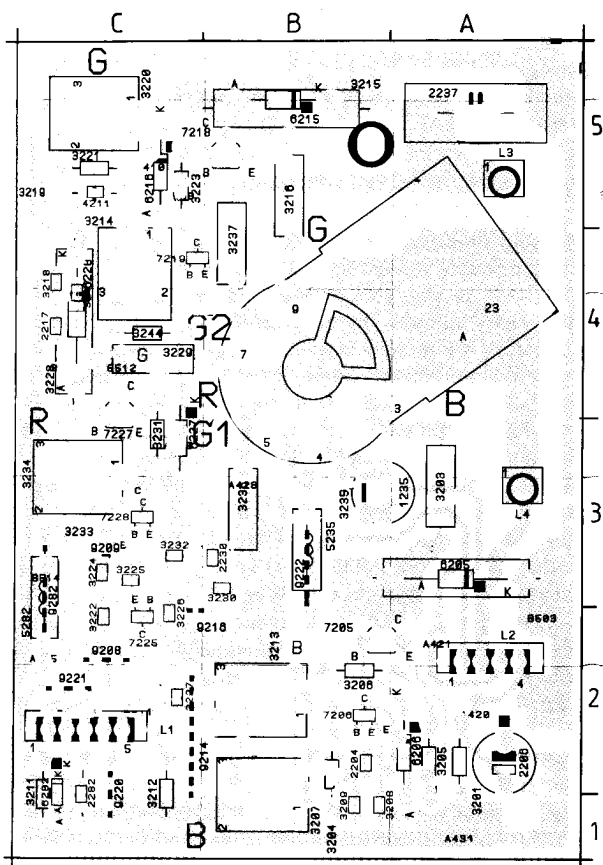
20-21" CRT panel (Narrow neck)



L5	C4	3268	C4	6286	C4*
L6	C1	3270	B4	6287	C3
L7	A3	3272	C5*	7235	C4*
L8	B3	3273	A3	7240	C5
0002	B2	3274	A4	7245	B4*
1236	B1	3275	A4	7255	B4*
2209	C5*	3276	B5	7265	B4
2210	C3	3277	A3	7275	A4
2212	C4*	3278	B5	7285	B4
2214	A2	3279	C3	9204	C5
2222	B5*	3280	A3	9205	C5
2232	B4*	3281	C5	9206	A2
3000	A6*	3282	C4*	9207	A2
3000	A6*	3283	C4	9224	C5
3238	C5*	3287	C3	9901	B6
3239	C5*	3288	B5	9902	B6
3240	C5*	3289	B3	9904	C6
3247	B4*	3300	B5	9905	C6
3249	C2	3301	A2	9907	C6
3252	B5	3302	A5	9908	C6
3253	B4*	3303	A5		
3254	A4	3304	B5		
3255	B4*	3305	C5*		
3260	C3	5237	C5		
3263	A4	6265	B5		
3264	A5	6266	C4		
3265	A5	6275	B4		
3266	C4	6278	A3		
3267	C4	6285	B4		

* : SMD component

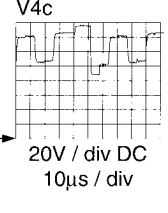
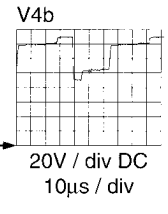
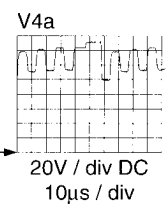
14-15-17-21" CRT panel (Mini neck)



L1	C2	6215	B5
L2	A2	6216	B4
L3	A4	6227	B3
L4	A3	6228	C4
23	B4	6282	C1*
1235	A3	7205	A2
2204	A2*	7206	A2*
2206	A2	7218	B4
2217	C4*	7219	B4*
2230	B3*	7225	B2*
2237	A5	7227	C3
2282	C1*	7228	B3*
3201	A2	9208	C2
3202	A3	9209	C3
3203	A3	9214	B2
3204	A2	9216	B2
3205	A2	9220	C1
3206	A2	9221	C2
3207	B1	9222	B3
3208	A1*	9282	C3
3209	A1*	9900	C1
3210	C1	9903	B1
3211	C1	9906	B1
3212	B1		
3213	B2		
3214	B4		
3215	B5		
3216	B4		
3217	C4*		
3218	C4*		
3219	C4		
3220	C4		
3221	C4		
3222	C2*		
3223	C4		
3224	C3*		
3225	B3*		
3226	B2*		
3227	B2*		
3228	C4		
3229	B4		
3230	B3*		
3231	B3		
3232	B3*		
3233	B3		
3234	C3		
3235	A3		
3236	B3		
3237	B4		
3244	B4		
4211	C4*		
5235	B3		
5282	C3		
6205	A3		
6206	A2		

* : SMD component

- V1 183V DC
- V2 8V DC
- V3 1V3 DC



→ = 0V

7. Electrical adjustments

1. Adjustments on the main panel (Fig. 7.1)

1.1 +100V power supply voltage

Connect a voltmeter (DC) across C2530. Adjust **R3532** at a black picture (beam current 0 mA) for a voltage of:

- +100V for 14-15-17"
- +92V5 for 20" narrow neck (neck diameter approx 30 mm) and 21" mini neck (neck diameter approx 20 mm) at a black picture
- +86V for 21" narrow neck (neck diameter approx 30 mm)

1.2 Horizontal centring

Is adjusted with potentiometer **R3354**.

1.3 Picture height

Is adjusted with potentiometer **R3410**.

1.4 Vertical centring

Can be adjusted by eventually mounting one of the resistors **R3401** and/or **R3408**.

1.5 Focusing

Is adjusted with the focusing potentiometer in the line output transformer.

1.6 IF filter (only for sets with SECAM LL' reception possibility):

Connect a signal generator (e.g. PM5326) via a capacitor of 5p6 to pin 17 of the tuner and adjust the frequency for 40.4 MHz.

Connect an oscilloscope to pin 1 of filter 1015. Switch on the set and select system Europe (BG/L is "low" for BGIDK reception).

Adjust **L5012** for a minimum amplitude.

1.7 AFC

- a. For sets with SECAM LL' reception possibility:
Connect a signal generator (e.g. PM5326) as indicated in point 1.6. Connect a voltmeter to pin 44 of IC7015/6A.

Adjust the frequency for 33.9 MHz and select system France (L/L' is "high" for L' reception). Adjust **L5040** for 3V5 (DC).

Next adjust the frequency for 38.9 MHz and select system Europe (L/L' is "low" for BGILDK reception). Adjust **L5043** for 3V5 (DC).

- b. For sets without SECAM LL' reception possibility:
Connect a signal generator (e.g. PM5326) as indicated above and adjust the frequency for 38.9 MHz (for PAL I at 39.5 MHz). Connect a voltmeter to pin 44 of IC7015/6A. Adjust **L5040** for 3V5 (DC).

1.8 RF AGC

If the picture of a strong local transmitter is reproduced distorted, adjust potentiometer **R3021** until the picture is undistorted.

Or: Connect a pattern generator (e.g. PM5518) to the aerial input with RF signal amplitude = 1 mV. Connect a multimeter (DC) at pin 5 of tuner. Adjust **R3021** so that voltage at pin 5 of tuner is 7V5 \pm 0V5 (DC).

2. Adjustments on the CRT panel (Fig. 7.2)

2.1 Vg2 cut-off points of picture tube

Apply a pattern generator (e.g. PM5518) and set it to a white raster pattern. Adjust contrast and Vg2 at minimum (Vg2 with potentiometer in line output transformer to the left). Adjust brightness until the DC voltage across potentiometer 3213 is 0V. Adjust **R3207** (B), **R3220** (G) and **R3234** (R) for a level of 125V for 14-15-17-21" mini neck (neck diameter of approx 20 mm) on the collector of transistors 7205, 7218 and 7227. Adjust **R3264** (B), **R3274** (G) and **R3302** (R) for a level of 150V for 20" narrow neck and 160V for 21" narrow neck (both neck diameter of approx 30 mm) on the collectors of TS7265 7275 and 7285. Adjust **Vg2** potentiometer until the light from the gun that first emits light is just no longer visible. Adjust the two **other** guns with the respective controls (3207, 3220 or 3234 or for mini neck and 3264, 3274 or 3302 for narrow neck) until just no light will be visible.

2.2 Grey scale (white D)

Apply a grey scale and adjust the set for normal operation. Allow the set to warm up for about 10 minutes. Adjust **R3213** and **R3214** (**R3263** and **R3273** for 20-21" narrow neck) until the desired grey scale has been obtained.

Main carrier (component side)

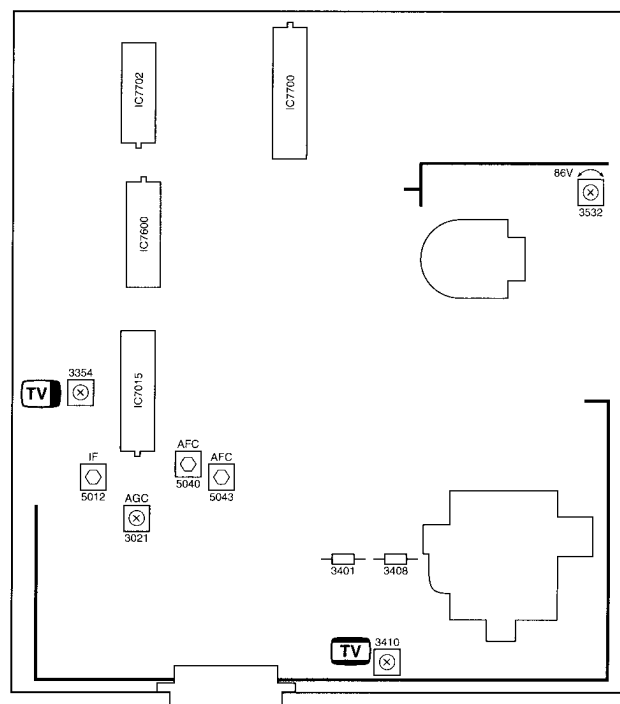


Fig. 7.1

CRT panel mini neck CRT panel narrow neck 20" 14-15-17-21"

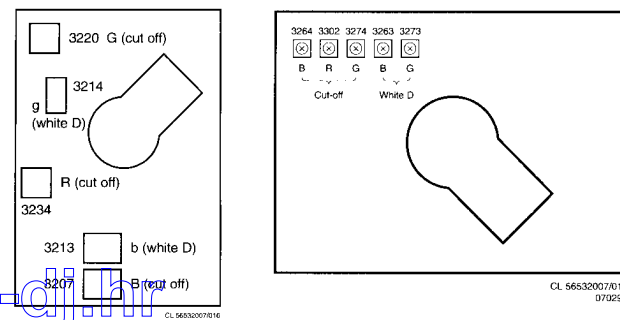


Fig. 7.2

For the description of the line, frame, audio, video and teletext processing see the description in the AA5 AA service manual

Description Switched Mode Power Supply (SMPS) for AA5 AB

Introduction

The AA5 switched mode power supply (SMPS) is mains isolated. The control IC7520 (MC44603) gives the pulses for driving FET 7540 with duty cycle control at a fixed frequency of nominal 50 kHz in normal operation (in standby, slow-start and overload situation the SMPS runs at other frequencies than these 50 kHz). The AA5 SMPS works with a switching FET, no opto-coupler and no thyristor switching windings on the secondary side.

IC7520 is featured with a slow-start circuitry and has over- and undervoltage-protection of the secondary supply voltages.

Unload and overload (short-circuit) protection is also included. In case the load decreases under a certain threshold level the SMPS will switch into standby-mode (in stand-by the SMPS is in the so called "reduced frequency mode"; nominal 20 kHz).

The +86V output gives a stabilised +86V in normal operation and approx +105V DC in stand-by mode (the supply voltage +8G is "down" so IC7015 is "down", so the line is shut "down").

The output voltages are:

- * +86V for the line output stage and the tuning system
- * +12V for the sound output amplifier
- * +8G for the small signal circuitry
- * +5A for the μ C and periphery (see diagram A5)
- * POR to ensure the μ C only starts up its software when the supply voltages are high enough (see diagram A5)

Duty cycle of the power supply depends on T-on of FET TS7540 which is controlled by pin 3 of IC7520. The IC detects the variations of the +86V (the secondary side of T5550) via sensing-winding 3-1 at the primary side of T5550.

The switching period of FET 7540 is divided in three main areas; T-on, T-off and T-dead (see Fig. 1).

During T-on FET 7540 conducts and so the energy which is extracted from the mains, is stored into the primary winding 4-7 of transformer T5550 with a linear increasing primary current (slope depends on the voltage across C2505). Via T-on regulation by pin 3 IC7520 the duty cycle of the SMPS and so the +86V is controlled.

During T-off FET 7540 does not conduct and so all energy "inside" the transformer is supplied to the load via secondary windings of T5550 and the secondary diodes (D6572, D6568 and D6566). The current through the secondary side of the transformer decreases with a linear slope (slope depends on the voltage at the secondary side of T5550).

During T-dead FET 7540 does not conduct and so no energy is extracted or supplied (I_{sec} is zero).

Primary side

Degaussing: R3506 is a dual PTC (2 PTC's in one housing). After switching "on" the set, the PTC is cold so low-ohmic and so the degaussing current is very high. After degaussing, the PTC is heated, so high-ohmic, so in normal operation the degaussing current is very low.

Mains voltage is filtered by L5500, full wave rectified by diodes 6510-6513 and smoothed by C2505 to the DC input voltage for the SMPS at pin 4 of T5550 (300V DC for 220V AC mains).

Start-up: Via the start-up circuitry R3520 and R3527 one side of the 220V AC mains is used to start-up IC7520 via the supply pin (V_{pin1}).

As long as V_{pin1} has not reached 14V5, IC7520 does not start up and only sinks 0.3 mA; As soon as V_{pin1} reaches the 14V5, IC7520 starts (FET 7540 into conduction) and pin 1 sinks a typical supply current of 17 mA. This supply current can not be delivered by the start-up circuit, so a take-over circuit has to be available. If no take-over takes place, the voltage on pin 1 will decrease and IC7520 switches off. In that case the restart will start again.

Note; This power supply is a SMPS (switched mode power supply) but not a SOPS (self oscillating power supply).

Take over of IC7520: During start-up a voltage across winding 2-1 is built up. At the moment the voltage across winding 2-1 reaches approx +12V, D6525 starts conducting and takes over the supply voltage V_{pin1} of IC7520 (take over current is approx 17 mA).

Control circuitry

IC7520 controls the T-on of FET 7540 in all operation modes by 3 mechanisms:

1. "Secondary-output-voltage-sensing" controls the secondary output voltages (via the feedback voltage V_{pin14}).
2. "I-prim current sensing" controls both the secondary output voltages and the maximum I-prim (via the current sense voltage V_{pin7}).
3. "Demagnetisation control" prevents the transformer T5550 from going into saturation via the so called "DEMAG" function at pin 8 (this causes slow-start operation).

Secondary output voltages feedback (pin 14 of IC7520):

Sense winding 3-1 has the same polarity as the secondary windings which are supplying the load. During T-off the secondary windings and so sense winding 3-1 are positive. D6530 conducts and so charges C2530; the DC level across C2530 is a reference for the secondary output voltages (e.g. the +86V). Via R3530, R3531 and potentiometer R3532 (for adjusting the +86V) this DC-voltage is brought to the required level for the error amplifier in IC7520 at pin 14. This voltage V_{pin14} is called feedback voltage and is used to control the secondary output voltages.

I-prim sensing (pin 7 of IC7520): The current sense voltage V_{pin7} is a measure for the I-prim through FET 7540. The I-prim is converted into a voltage by R3539 and R3540. The current sense voltage V_{pin7} is used to control both the secondary output voltages and the maximum I-prim (see peak current limiting).

Demagnetisation control (via pin 8 of IC7520): Supply winding 2-1 has the same polarity as the secondary windings which are supplying the load. As a result the voltage across this winding is negative during T-on, positive during T-off and oscillating during T-dead. The so called demagnetisation (block "DEMAG" in IC7520) function at pin 8 of IC7520 is used for blocking the output V_{pin3} during the time that there is still energy in the transformer (I_{sec} not zero). This is realised by delaying the T-on until the demagnetisation is completely finished. In this way the currents and voltages at the moment of switching "on" the FET are controlled.

IC7520 control (see Fig. 2 and Fig. 3): The error amplifier (block A in Fig 2) compares the feedback voltage V_{pin14} with an internal reference voltage of 2V5. The output voltage $V_{error-out}$ of this error amplifier is fed to another comparator (block B in Fig 2). This comparator compares the $V_{error-out}$ and the current sense voltage V_{pin7} . As soon as the current sense voltage V_{pin7} becomes higher than the output-voltage of the error amplifier $V_{error-out}$, the comparator B gives a spike (the output of comparator B is the so called current sensing output-voltage $V_{cs out}$).

Flip flop (block C in Fig 2) drives the output pin 3 (V_{pin3}) via a buffer amplifier (block D). The flip flop is set by positive edge of the output of the oscillator (V_{osc}) and reset by the spike $V_{cs out}$.

As a result the positive edge (T-on stops) in case the slow-start pr

Stable load

1. In case of (and so a remains will remain)
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3. In case of increase causes V give the (shorter output vo new balanc reference As a resu so less e less ene
4. In case of the posit cycle, will starting p so the fre used dur

Peak current

1V DC. Via th the maximum (7540) is dete In case the lo the I-prim is overload prot protection).

Cycle-by-cycle

cycle-by-cycle This means th doing so the and all prote

Slow-start:

This will be d and the duty following 3 pl

1. The frequ (50 kHz f realised v "DEMAG" tion (T-on demagne
2. The volta start-up th also grad overload
3. The duty lowest po

As a result the pulse V_{pin3} becomes "high" (T-on starts) by the positive edge of V_{osc} from the internal oscillator and "low" (T-on stops) by the spike of $V_{cs out}$ (the T-on start will be delayed in case the transformer is not yet demagnetised; see the slow-start procedure).

Stable load and increasing / decreasing load (see Fig. 3):

1. In case of a stable load, the feedback voltage V_{pin14} (and so also the maximum current sense voltage V_{pin7}) remains the same. As a result the T-on and so the duty cycle will remain the same.
2. In case of an increasing load, the secondary output voltages decrease. The voltage on pin 14 would like to decrease which causes $V_{error-out}$ to increase. As a result comparator B will give the pulse later; V_{pin3} will be "high" for a longer period (longer T-on so the duty cycle increase) and so the secondary output voltages will be increased (corrected). This will give a new balance of feedback voltage V_{pin14} and the internal 2V5 reference voltage, at a new larger duty cycle.
As a result of the longer T-on, the maximum I-prim increases, so more energy can be stored in the transformer. In this way more energy will be supplied to the load.
3. In case of a decreasing load, the secondary output voltages increase. The voltage on pin 14 would like to increase which causes $V_{error-out}$ to decrease. As a result comparator B will give the pulse earlier; V_{pin3} will be "high" for a shorter period (shorter T-on so the duty cycle decrease) and so the secondary output voltages will be decreased (corrected). This will give a new balance of feedback voltage V_{pin14} and the internal 2V5 reference voltage, at a new smaller duty cycle.
As a result of the shorter T-on, the maximum I-prim decreases, so less energy can be stored in the transformer. In this way less energy will be supplied to the load.
4. In case the demagnetisation of the transformer is not finished, the positive edge from the oscillator, which will start a new cycle, will be overruled (via buffer block D) as being the starting point of T-on. As a result the T-on will be delayed and so the frequency of the SMPS will go down. This procedure is used during start-up.

Peak current limiting is realised by an internal clamp at V_{pin7} at 1V DC. Via this clamp the V_{pin7} can never exceed 1V DC and so the maximum value of I-prim (maximum current through FET 7540) is determined.

In case the load needs more than the maximum power, by then the I-prim is already at his maximum level so the SMPS will go in overload protection (see foldback principle explained at overload protection).

Cycle-by-cycle control: The T-on control is controlled on a cycle-by-cycle basis (because of the flip flop block C in IC7520). This means that in every cycle the T-on is determined again. By doing so the secondary voltages control, peak current limitation and all protections can be very accurate and fast.

Slow-start: As soon as $V_{pin1} > 14V5$ DC the SMPS will start-up. This will be done by a slow-start procedure (both the frequency and the duty cycle will be built up during slow-start). The following 3 phenomenas take place during start-up:

1. The frequency will slowly increase up to the nominal frequency (50 kHz for normal operation and 20 kHz for stand-by). This is realised via the demagnetisation function at pin 8; via this "DEMAG" function, FET 7540 will only be driven into conduction (T-on will only become "high") when T5550 is totally demagnetised.
2. The voltage at pin 5 determines the foldback point. As during start-up this V_{pin5} is gradually built-up, the foldback point will also gradually increase (see foldback principle explained at overload protection).
3. The duty cycle will slowly increase beginning at the absolute lowest duty cycle possible. The maximum duty cycle is determined by C2533 at pin 11 IC7520; as C2533 is uncharged at start-up, the power supply starts up at the lowest possible duty cycle.

Stand-by mode: In stand-by mode the load decreases (see description of stand-by on the secondary side) under a certain threshold level. The SMPS will determine this threshold level and so switch to the so called "reduced frequency mode" at 20 kHz. This minimal load threshold level is determined by R3579 at pin 12. (in AA5 the SMPS does not have a burst mode in stand-by, only a reduced frequency mode).

50 kHz: In normal operation mode the internal oscillator gives 50 kHz. This frequency is controlled by C2531 at pin 10 IC7520 and by R3537 pin 16 IC7520.

20 kHz: In stand-by mode the internal oscillator gives 20 kHz. This frequency is controlled by R3536 at pin 15 IC7520.

FET 7540 gate regulation: D6524 prevents pin 3 of IC7520 from becoming negative (this will destroy the IC) due to stray inductance in the gate part. The safety resistor R3524 limits the drive current to the gate of FET 7540. The C2526 has a ESD protection function.

Pin 9 IC7520: Pin 9 is the sync pin of the internal oscillator in IC7520. When V_{pin9} is between 0V7 and 3V7, the oscillator is disabled so:

1. at switching "on" the TV, the oscillator is enabled as soon as $V_{pin9} > 3V7$.
2. at switching "off" the TV, the oscillator is disabled as soon as $V_{pin9} < 3V7$.

This switching "off" behaviour is used to switch "off" the SMPS very fast. In this way also the LED switches "off" immediately in case the set is switched "off" (via the mains switch or the stand-by command).

Typical values for the AA5 SMPS:

- * In a stable situation V_{pin14} is typical 2V5.
- * At maximum output power of 100W the V_{pin7} is 1V DC (I-prim_{max} = 2.5A)
- * At medium output power of 50W the V_{pin7} is 0V5 DC (I-prim_{max} = 1.25A)

Protections

Overvoltage protection of the secondary voltages: After start-up is the supply voltage V_{pin1} taken over by positive winding 2-1, and so after start up V_{pin1} is a measuring point for the secondary output voltages. After start-up (via an internal switch) this V_{pin1} is internally tapped (voltage divided) to a voltage which can be measured at pin 6 (so V_{pin6} is also a measuring point for the secondary output voltages).

As soon as the voltage $V_{pin6} > 2V5$, the logic in IC7520 will shut down the output at pin 3. This 2V5 threshold at V_{pin6} , is equivalent to a V_{pin1} of 16V DC which is equivalent to a voltage at the supply voltage +86V of approx 110V DC (normal operation) and 130V DC (stand-by). After switching "off" because of overvoltage protection, the IC starts up again (see slow-start).

→ In case an overvoltage situation is sensed at the secondary output voltages, the SMPS will go in overvoltage protection. In case the overvoltage situation remains present, the SMPS will give overvoltage protection, slow-start, overvoltage protection, slow-start, etc → a very good audible hick-up mode.

Undervoltage protection of the secondary voltages: If the supply voltage $V_{pin1} < 9V$ DC the output pulse at pin 3 will be shut down. As soon as $V_{pin1} < 7V5$, the IC7520 will be totally shut "off". V_{pin1} of 9V DC is equivalent to a voltage at +86V of approx 65V DC (normal operation) and 80V DC (stand-by), V_{pin1} of 7V5 is equivalent to a voltage at +86V of approx 54V DC (normal operation) and 65V DC (stand-by).

→ In case an undervoltage is sensed at the secondary output voltages, the SMPS will first switch "off" the pulse and then switch "off" the complete IC7520. In case the IC7520 is switched "off", the SMPS will switch "off". In case the undervoltage situation remains present, the SMPS will give undervoltage protection, slow-start, undervoltage protection, slow-start, etc → a very good audible hick-up mode.

Unload protection: In case the load goes down (e.g. the line goes down because of stand-by mode or some failure in the line) this is detected by IC7520 via I-prim and secondary output voltages sensing.

In case the load decreases below a certain threshold the SMPS will switch in "reduced frequency mode" of 20 kHz (this threshold is determined by the voltage level at pin 12 IC7520);

→ In case of an unload situation the set will switch to "low frequency mode" or stand-by mode.

Whether this unload situation of the SMPS is caused by the stand-by command or by a failure (e.g. in the line), can only be determined by switching on the set again which the remote control; in case of stand-by mode the TV will switch "on" again, in case of an unload situation the set will not switch "on".

Overload (short-circuit) protection (see Fig. 4): If the secondary load becomes too high, I-prim becomes too high which is sensed by the current sense voltage V_{pin7} . This voltage V_{pin7} is not allowed to exceed 1V DC by IC7520 and so gives current limiting. As the I-prim is limited, the secondary output voltages will also drop and so supply voltage V_{pin1} will drop. As soon as $V_{pin1} < 9V$ DC the driving pulse at pin 3 will stop. As a result of these 2 mechanism in case of an overload the secondary voltages will drop very fast. This is called the foldback mechanism; the foldback point can be adjusted by pin 5 IC7520 (for AA5 this point is adjusted to a maximum tolerable output power of 100W).

After this foldback, the IC starts up again (see slow-start). In case the overload situation remains present, the SMPS will give foldback again, slow-start, foldback, slow-start, etc;

→ As a result in case of a short-circuit (or overload) the TV will be in a very good audible hick-up mode.

Secondary side

+86V for the line output stage and the tuning system is made via the positive winding 18-15, rectifier diode D6561 and smoothing capacitor C2569.

+12S for the sound output amplifier is made via the positive winding 14-13, rectifier diode D6572 and smoothing capacitor C2573.

+8A (for the whole small signal part), **+5A** (for the μC and periphery) and the **POR** is made via the positive winding 16-15, rectifier diode D6566 and smoothing capacitor C2563. Positive winding 15-16 gives after rectification and smoothing a DC voltage of approx 10V DC across C2563 in normal operation. This 10V DC is stabilised to +8A by IC7567 and to +5A via a stabilizer circuit around TS7641 and TS7642.

Power On Reset (POR): In order to ensure that the μC starts up correctly, a POR signal (Power On Reset) must be given. The POR procedure consists of keeping the reset pin 33 of the μC "low" for at least 1 msec after switching on the set with the mains switch.

The POR is kept "low" by means of TS7641 and zener D6641; TS7641 only starts conducting when the emitter of TS7641 becomes $5V1 (D6560) + 0V7 (TS7561) = 5V8$. D6642 makes sure the POR signal will never exceed the 4V7.

Stand-by: The STANDBY command from the μC is "low" for stand-by operation. So in stand-by mode TS7640 does not conduct, so TS7565 conducts. As a result the +8A is reduced to 1V2 in stand-by mode. The whole small signal part including IC7015 will not be supplied any more. As also IC7015-6E does not work any more, the line will be shut. Because the line is shut, the load of the SMPS will drastically drop. IC7520 detects that the load is under a certain level (see unloaded protection) and so the SMPS will go into stand-by mode (reduced frequency mode; 20 kHz).

In normal operation the +86V supply voltage has a value of approx +86V DC, in stand-by mode this +86 has a value of approx +105V DC.

No protections are available at the secondary side.

side.

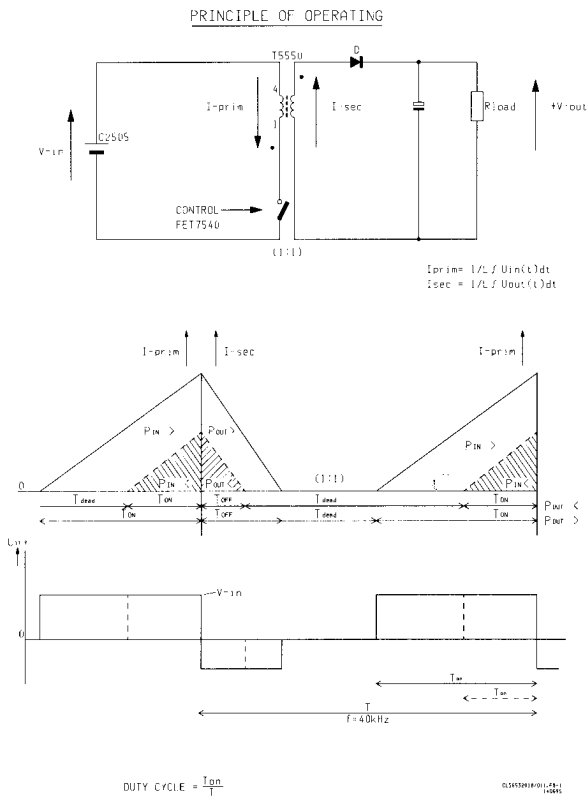


Fig. 1

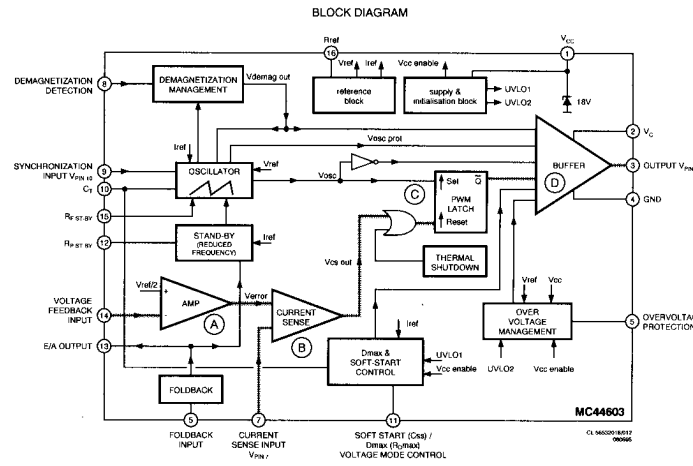


Fig. 2

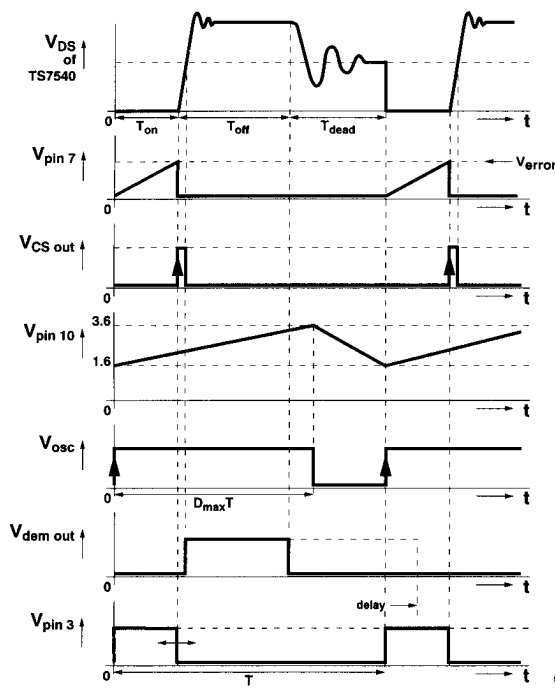


Fig. 3

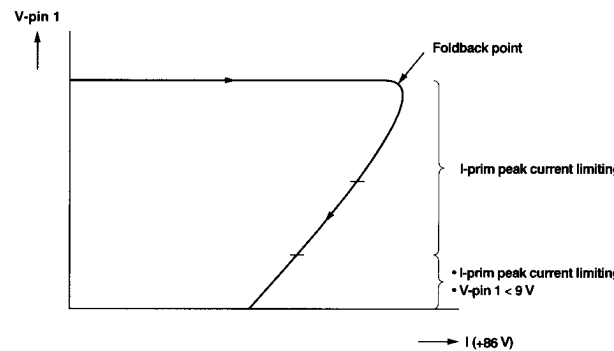


Fig. 4

8. Repair facilities

Functional blocks

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

Test points

The AA5 chassis is equipped with test points in the service printing on both sides of mono-board. These test points are referring to the functional blocks as mentioned above:

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

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

Service default mode (SDM)

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

Entering the service default mode can be done in 2 ways:

1. By short-circuiting the service pins S1 and S2 of the microcomputer (pin 7 of IC7600) while switching on the set with the mains switch
2. From normal operation mode by pressing the button "DEFAULT" on the DST (Dealer Service Tool) RC7150.

Leaving the service default mode to normal operation can only be done by the stand-by on the remote control (so not via mains switch "off"; after mains switch "off" and then "on" again the set will start up in the Service Default Mode again to enable easy faultfinding).

Functions of the service default mode (see Fig. 8.1):

1. All analog settings (volume, contrast, brightness and saturation) are in the mid position (in μC with V1.0 the volume in the SDM is set at 25%, from V1.1 onwards the volume in the SDM is set at 50%).
2. For VST sets are to program number 1 indicated in the right top corner
3. For PLL sets are tuned to 475.25 MHz
4. Delta volume settings are not used (delta volume setting per program in reference with the PP volume setting which is valid for all programs)
5. OSD error message (present available error code) is displayed continuously
6. Store open and store close commands will act as search and auto store
7. Automatic switch off function (set switches "off" after 15 minutes no IDENT) will be switched off
8. Hotel mode will be disabled
9. All other functions remain normal controllable
10. A counter in the middle of the screen indicate the normal operation hours of the set in a hexadecimal code (every time the set is switched "on" the counter is incremented by 1 hour, so +1 at the counter).
11. An "S" in the middle of the screen (next to the counter) indicate that the set is in the service default mode

Counter + "S" for SDM active + prog nr. →

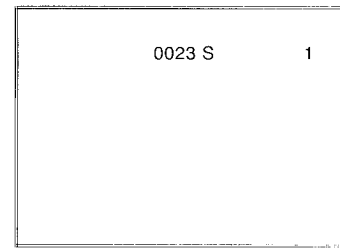


Fig. 8.1

Service Menu (SM)

Entering the service menu can be done in 2 ways:

1. From service default mode by simultaneously pressing the buttons "-" and "+" buttons on the local keyboard.
2. From normal operation mode by pressing the button "ALIGN" on the DST RC7150.

Leaving the service menu to normal operation can be done in 2 ways:

1. Via the stand-by on the remote control
2. Via mains switch "off"

For reading a new option setting, the set must be switched "on" by the mains switch (so not by stand-by as by then the EEPROM-settings are not read).

Functions of the service menu (see Fig 8.2):

1. Software version of the microprocessor used in that typical set is displayed in the right top corner
2. A counter in the middle of the screen indicate the normal operation hours of the set in a hexadecimal code (every time the set is switched "on" the counter is incremented by 1 hour, so +1 at the counter).
3. The "S" in the middle of the screen next to the counter indicate that the set is in the service default mode
4. Error code history; The 5 last different error codes occurred are stored in the EEPROM memory; last error code detected will be displayed on the right side (see for an overview of all possible error codes Fig. 8.4), so e.g.:

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

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

Counter + "S" for SM active + software version →

Error code history →

Option setting bar →

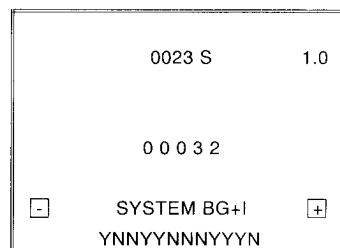


Fig. 8.2

5. Option setting;

The options of the set can be changed in the service menu. In the 2 bottom lines the options are given. Control of the options is with the following keys on the remote control:

- * PROGRAM +/-

Select the option to be changed;

Via the "PROGRAM +/-" button to option to be changed can be selected by scrolling through the possible options in the upper row from left to right (via the "PROGRAM +" button) or from right to left (via the "PROGRAM -" button). The selected option will be displayed in the upper row, the

Text displayed in the upper option in the service me
SINGLE SYSTEM I SYSTEM BG+L SYSTEM BG+L+
PLL TUNER
NO TXT 1P TXT 4P TXT
16/9 SWITCH
S-VIDEO
SCART
SHARPNESS
LOCAL MENU
40 PROGRAMS
SLEEPTIMER
FOR GERMANY ONLY

Error

The mi the i²C via OS operati

1. In "LE Th wil
2. In an det and
3. In err the the cor

present "Y" or "N" status of that option (see table 8.3) will be blinking in the bottom row (when arrived at the end of the row the scrolling will be continued at the other side).

* MENU +/-

Change the selected option; via "MENU +/-" buttons the selected option can be changed. The selected Y (yes) or N (no) blinks and via either "MENU +" or the "MENU -" you toggle through the "Y" or "N" possibility.

The options (both the changed and the not-changed options) are stored in the EEPROM as soon as the service menu is left (by stand-by or mains switch "off"). The new option settings are only read after mains switch "on" (so not after switching on the set from stand-by mode).

The following table indicates the possible options and there technical consequences:

Text displayed in the upper option row in the service menu	In case the "N" or "Y" blinks, it can be changed	The technical consequence for the selected option
SINGLE SYSTEM I SYSTEM BG+L SYSTEM BG+L+I	→ NN → NY → YN → YY	→ For a PAL BG only set → For a PAL I only set → For a PAL BG + SECAM LL' set → For a PAL BGI (or PAL BGDK) + SECAM LL' set
PLL TUNER	N Y	→ For a VST tuner set → For a PLL tuner set
NO TXT 1P TXT 4P TXT	→ NN → NY → YN	→ For a set without teletext → For a set with 1 page WST teletext → For a set with 4 page FLOF teletext
16/9 SWITCH	N Y	→ Disable 16/9 switching possibility → Enable 16/9 switching possibility
S-VIDEO	N Y	→ For a set without SVHS connectors → For a set with SVHS connectors
SCART	N Y	→ For a set without a scart connector → For a set with a scart connector Note: The SCART option can only be changed when the S-VIDEO option is "N"
SHARPNESS	N Y	→ Disable sharpness control → Enable sharpness control
LOCAL MENU	N Y	→ No ring menu after pressing "MENU" on the local keyboard → Ring menu after pressing "MENU" on the local keyboard
40 PROGRAMS	N Y	→ 70 programs can be stored → 40 programs can be stored
SLEEPTIMER	N Y	→ Disable sleeptimer function → Enable sleeptimer function
FOR GERMANY ONLY	N Y	→ Disable ATS function → Enable ATS function (only works when ATS software is present)

Fig. 8.3

Error messages

The microcomputer also detects errors in circuits connected to the I²C (Inter IC) bus. These error messages are communicated via OSD (On Screen Display) and a flashing LED both in normal operation and in the service menu (error code history buffer):

1. In normal operation;

In normal operation both the "OSD error message" and the "LED error" indication will display the present detected error. The displaying of both the OSD and the LED error indication will only take a limited time.

2. In the service default mode;

In the service default mode both the "OSD error message" and the "LED error" indication will display the present detected error. In the service default mode both the OSD and the LED error indication will be displayed permanently.

3. In the service menu;

In the service menu both the "OSD error number" (in the error code history) and the "LED error" indication will display the present detected error. In the service default mode both the OSD and the LED error indication will be displayed continuously.

"OSD error message" (normal operation)	"OSD error number" (service menu)	"LED error" "on"/"off" in SEC	Error description	Possible defective component
No indication	0	No blinking LED	No error	--
ERROR: RAM	1	1 sec on / 1 sec off	µC error	IC7600
ERROR: BUS	2	2 sec on / 2 sec off	General I ² C	I ² C bus is blocked
ERROR: EEPROM	3	3 sec on / 3 sec off	EEPROM error	IC7685
ERROR: TELETEXT	4	4 sec on / 4 sec off	Teletext error	IC7700/7702 or option wrong
ERROR: TUNER	5	5 sec on / 5 sec off	PLL tuner error	PLL tuner or option wrong

Fig. 8.4

Reset volume/program (delta volume) for all programs at once

It is also possible to leave the service menu with the MENU button. After one time pressing the MENU button in the service menu, a new menu is entered (see Fig. 8.5) in which the volume/programs-settings (also called delta volume settings) of all programs can be deleted. In case YES is selected via the MENU+ button, all volume/program-settings are deleted at once. After another time pressing the MENU button the TV will switch to normal operation (when the service menu is entered via the pins S1 and S2) or service default mode (when the service menu is entered with the DST).

Counter + "S" for SM → active + software version
Error code history →
Reset all volume/program settings →

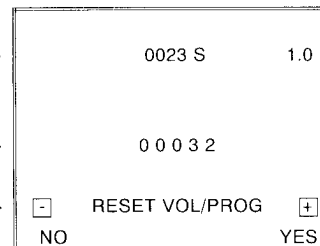


Fig. 8.5

Hotel mode

* Hotel mode "on"

The hotel is activated when pressing simultaneously the "MENU" button on the local keyboard and the "SLEEPTIMER" or "OSD" button on the remote control while program 38 is selected for at least 3 seconds.

When the hotel mode is activated, this is indicated by a "H+" on the OSD (this will be displayed until the set is switched off by the mains switch or via stand-by).

* Hotel mode "off"

Repeat above mentioned procedure once again. When the hotel mode is de-activated, this is indicated by a "H-" on the OSD (this will be displayed until the set is switched off by the mains switch or via stand-by).

* Functions of the hotel mode

- The volume present on the moment the hotel mode was switched "on" is the maximum volume level in the hotel mode.
- The install mode can not be opened (the message "LOCKED" will be displayed for 3 seconds if a store open command is given).
- The delta volume menu can not be entered.
- PP (personal preference) can not be stored (the message "LOCKED" will be displayed for 3 seconds if a PP-store command is given).
- At switch "on" (by mains switch or remote control) program number 1 will always be selected.

Installation


- Follow the instructions very closely and step by step.
- This circle in front of a sentence indicates that you have to do something.
- This arrow in front of a sentence indicates the result of what you have done.
- > *Text in **italic** indicates help information.*

Place the TV on a solid base.
Leave at least 5 cm around each side of the TV for ventilation.

To prevent any faults and unsafe situations, do not place any objects on top of the sets.

The TV can only operate at a mains voltage of 220/240 V~, 50 Hz; consult your dealer if the mains supply is different.

Make sure that the connection facilities to any TV installed in your house are in good condition. Only use good quality aerial connectors and cables.
The aerial plugs should be tightly connected.



- Connect the TV tightly to the mains supply socket.
- Connect the aerial (indoor or outdoor) plug tightly to the  socket on the back of the TV.

Remote control


- Remove the battery cover from the remote control.
- Insert the batteries, as indicated on the remote control.
- Replace the battery cover.

The batteries supplied with the remote control of your TV do not contain the heavy metals mercury and cadmium. In many countries flat batteries may not be disposed off with your household waste. **Please ensure that batteries are disposed off in accordance with any local regulations.**

Switching TV on and off

- Press  on the front of the TV.
- The TV is switched on.
- > Is the TV still switched off? Then the TV is on Stand-by.
- Press **P** - or + or a digit button on the remote control, or - or + on the TV, to switch on the TV.
- Press  again to switch off the TV.

Stand-by

- By pressing  on the remote control you can temporarily switch the TV off.
- Press **P** - or + or a digit button on the remote control, or - or + on the TV, to switch on the TV again.

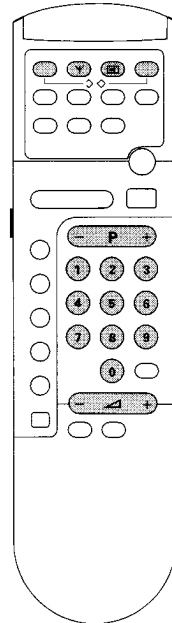
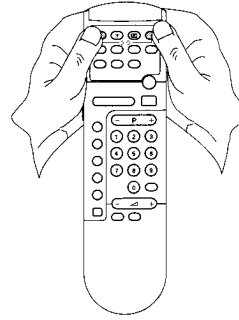
Automatic switch off

If after a period of 15 minutes no aerial signal is received, the TV automatically switches to Stand-by.


Televisions consume energy in the stand-by mode. Energy consumption contributes to air and water pollution. We advice you to switch off your TV overnight instead of leaving it on stand-by. You save energy and the picture tube is demagnetised which supports good picture quality.

Auto Store

The Auto Store function can be used to find and store all available channels quickly. Channels are stored on program numbers in the same sequence as they are found. After Auto Store is




Storing TV channels

Write down the TV channels and the assigned program numbers while storing.
Storing TV channels can be stopped by pressing simultaneously the two  buttons.

69 TV channels (1 to 69) can be stored on program numbers.

Follow carefully steps **1, 2, 3, 4, 5.**

1.



- Press simultaneously the two  buttons.
- **INSTALLATION** appears on the screen.

2.

- Not all countries broadcast TV programmes in the same way. We speak of different TV systems. You can select a different TV-system for each separate program number.
- Press **Y** one or more times to select the required TV-system. You can select among the following TV-systems:

Region	TV-system	Used in
EUROPE	PAL BG - SECAM BG	West European countries except France, except United Kingdom and Ireland.
FRANCE UK	SECAM L L' PAL I	France. United Kingdom and Ireland.

3.

- Press  to start the search.
- The TV automatically searches until a TV channel is found.
- If you want to continue searching for a specific TV channel then press  again.


4.

- Press **P** - or + to select the program number (1 to 69) where you want to store the TV channel.
- > The selected program number is displayed on the screen.

Important

You cannot store TV channels on program number 0.
Program number 0 is reserved to select electronic equipment connected to the TV. See "Peripheral connections".

5.

- Press simultaneously the two  buttons to store this selection.
- The message **STORED** appears for a few seconds on the screen.

Repeat steps **1, 2, 3, 4, 5** until all the TV channels you require have been stored on program numbers.

The stored picture and sound values can also be recalled by pressing **PP**.

- Press **MENU**.
- **VOLUME** appears, adjust the volume by pressing - or +.

Auto Store

The Auto Store function can be used to find and store all available channels quickly. Channels are stored on program numbers in the same sequence as they are found. After Auto Store is started, the TV starts searching for a TV channel. When a TV channel is found, it will be automatically stored on program number 69. Searching will start again automatically. If another TV channel is found, it will be stored on program 68, etc.

Your TV can receive different TV systems. With Auto Store the TV searches automatically through all TV systems and stores all TV channels available.

The TV systems are automatically selected as in the following sequence and channels in those TV systems are searched for automatically:

- 1 - TV system FRANCE (SECAM L L')
- 2 - TV system EUROPE (PAL/SECAM BG)
- 3 - TV system UK (PAL I)

- Press simultaneously the two \diamond buttons longer than 4 seconds.
 - **INSTALLATION** appears.
 - Press + (YES) to start the **AUTOSTORE** function.
- The Auto Store is stopped by pressing simultaneously the two \diamond buttons.

At the end of the Auto Store cycle the TV switches to program 69.

To reorganize the sequence of the TV channels stored by the Autostore, refer to the section "Storing TV channels" following steps 1, 4, 5.

Operation

On Screen Display

The On Screen Display (OSD) information allows you to see the program number on which a TV channel is stored, the timer status and a moving bar if the volume is adjusted.

- Press \square to display information on the screen.
- Press \square again to switch off information.

Selecting TV channels

- Press **P** - or + or press one or two digit buttons on the remote control.
- To select a program number from 0 to 9 press one digit button.
- To select a program number from 10 to 69 you must press two digit buttons in less than 4 seconds.

- or
- Press - or + on the TV.

Volume control

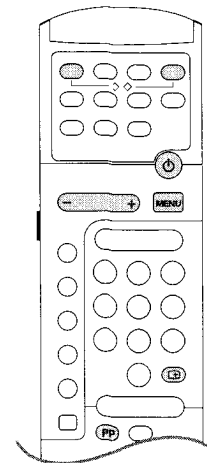
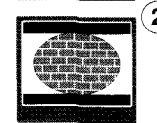
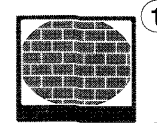
- Press \triangleleft - or + on the remote control.
- Press M to switch off the sound.
- Press M again or \triangleleft + to switch on the sound.

Menu on screen

With the menu on the screen you can change and store the picture and sound settings. You can also set the timer, select the screen format and pre-select the external electronic equipment connected to the TV.

When you switch on your TV, the picture and sound settings have certain values. These values are initially stored by the factory. Using the menu on screen you can change these values. Also if you store these values (by pressing simultaneously the two \diamond buttons after a change), the TV will switch on with your stored picture and sound values.

If you want to leave the menu, for example after changing the contrast setting, you can either wait approximately 10 seconds or continue to press the **MENU** button until the menu disappears from the screen.



The stored picture and sound values can also be recalled by pressing **PP**.

- Press **MENU**.
- **VOLUME** appears, adjust the volume by pressing - or +.
- If you want to store this setting press simultaneously the two \diamond buttons.
- Press **MENU** again.
- **BRIGHTNESS** appears, adjust the brightness by pressing - or +.
- If you want to store this setting press simultaneously the two \diamond buttons.
- Press **MENU** again.
- **CONTRAST** appears, adjust the contrast by pressing - or +.
- If you want to store this setting press simultaneously the two \diamond buttons.
- Press **MENU** again.
- **SHARPNESS** appears, adjust the sharpness by pressing - or +.
- If you want to store this setting press simultaneously the two \diamond buttons.
- Press **MENU** again.
- **COLOUR** appears, adjust the colour by pressing - or +.
- If you want to store this setting press simultaneously the two \diamond buttons.

- Press **MENU** again.

(The following function is only present on certain TV models).

- **SCREENFORMAT** appears, adjust the screenformat by pressing - or +.
- This function can be used if you receive a picture which looks like indicated in drawing 1. By pressing +, you select **WIDE** (wide) and the picture will be changed as indicated in drawing 2.
- Press **MENU** again.

(The following function is only present on certain TV models).

- **EXTERNAL** appears.
- If you select the program 0 the picture of a device connected to the TV can be displayed on the screen (see also "Peripheral connection").
- By pressing - or +, you can select:

Program 0 = **AV**: For devices connected via Euroconnector (scart) or via front Audio-Video connector.

or

Program 0 = **S-VIDEO**: For devices connected via front S-VIDEO connector.

When changing the selection, program 0 will be automatically selected and **AV** or **S-Video** will be displayed on the screen.

Note: If you see a double or black and white picture on the screen, check whether the selection of the device connection is made correctly (see also "Peripheral connection").

- Press **MENU** again.
- **TIMER** appears.
- The timer can be used to switch on or off the TV automatically after the time you want. You can set the time after which the TV switches on or off in steps of 10 minutes to a maximum of 24.00 hours.

Switching off automatically:

- Press - or + to select the time after which the TV should switch off. The count down starts immediately. You can see the remaining time by pressing \square on the remote control.
- During the final minute of the selected time period, the seconds remaining are automatically shown on the screen.
- At the end of this time period the TV switches to stand-by mode.

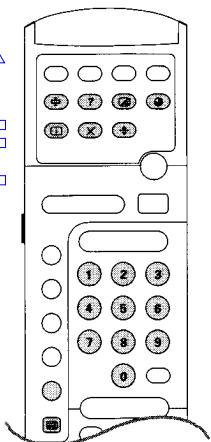
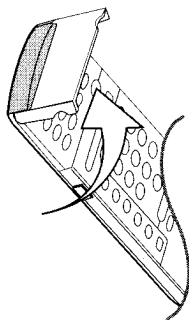
Switching on automatically:

- Press - or + to select the time after which the TV should switch on. The count down starts immediately.
- Press O to switch the TV temporarily off.
- The TV will switch on after the time you have selected.

Note: If you switch on your TV again before the selected time has elapsed, the timer will be switched off automatically. If you do not press any button within 3 hours after the TV has switched on automatically, the TV will switch automatically to Stand-by again.

If you want to stop the **TIMER** press - or + until the selected period on the screen is 00.00.

- Press **MENU**.
- The menu disappears.



Different volume level for a specific TV channel

Not all TV channels are broadcasting the volume at the same level. With this function you can align the volume level of a specific TV channel (which is louder or soft) to the other TV channels.

- Press MENU longer than 4 seconds.
- Immediately **VOLUME** appears, keep on pressing until "**PROGRAM**" appears.
- Press **P** — or **+** to select the program number of the TV channel that you want to adjust the volume level.
- Press — or **+** to adjust the volume level.
- Press simultaneously the two **◇◇** buttons to store the volume level.
- ▷ **STORED** appears for a few seconds.
- Select another TV channel to adjust the volume level or press several times MENU to leave the menu.

Teletext

A number of TV channels broadcast information via teletext. Teletext is an information system which can be consulted the same way as a newspaper or magazine.

Teletext Time

The time can only be called up if the TV channel you are watching is also broadcasting teletext.

- Press **●**.
- ▷ The time appears.
- Press **●** again to switch off the time.

Switching Teletext On and Off

- Select the TV channel for the desired teletext broadcast.
- Press **■** to switch on the teletext.
- ▷ The contents appear on the screen together with an information line at the top.

In the information line appears:

- the number of the page requested.
- the page counter.
- date and time.

- only **P 100** if there is no teletext broadcast.

- Press **■** again to switch off the teletext.
- ▷ The TV channel reappears.

Selecting a Teletext Page

Direct page selection

- Enter the desired page number with the digit buttons. The number of pages always includes 3 digits.
- ▷ The page counter seeks the page.
- ▷ If the counter keeps searching, then the page is not available or does not exist.

*Does **P 1...** appear or have you entered an incorrect number?*

First complete the number with random figures and then enter the correct page number again.

Selection with the options line

Signs red — and blue + of the option line enable the direct selection of the following or the previous page.

- Press the red button or the blue button on the remote control to select either the previous or the following page.
- or Certain teletext systems allows a quicker access to the headings: in this case the section names are displayed in the option line.
- Select the desired subject with the corresponding colour button on the remote control.

Special teletext functions

Hold a rotating page

Sometimes the information is contained on several pages following each other. In this case they are automatically displayed in rotation. The total number of subpages and the subpage displayed are indicated on the screen. For example: 1/4, meaning page 1 out of 4 is being displayed.

- Press **⇄** to hold a page.
- ▷ **⇄** appears in the information line.
- The information in this subpage is not being updated anymore.
- Press **⇄** again.
- ▷ The page rotation starts again.

Reveal concealed information

Some pages contain concealed information, such as solutions to riddles and puzzles.

- Press **?** to call up concealed information.
- Press **?** again to switch off the concealed information.

Enlarge a page

- Press **⇄** to enlarge the top half of the teletext page.
- Press **⇄** again to enlarge the bottom half of the teletext page.
- Press **⇄** once more to return to normal page size.

Overlay of the teletext on the TV image

- Press **■**.
- The teletext page is superimposed over the TV program on the screen.
- Press **■** again.
- ▷ Only the teletext page is displayed.

Selecting a specific subpage

Sometimes the information is contained on several pages following each other. By adding a subcode you can call up a subpage and hold it.

- Enter the page number.
- Press **●**.
- Enter the subpage with 4 digits: e.g. 0003 for subpage 3.
- In the meantime, you may return to the picture broadcasted from the TV channel.
- Press **X**.
- ▷ The TV channel appears.
- **■** indicates that you are still in the teletext mode. When the page has been found, the information line appears on your screen.
- Press **X** again.
- ▷ Teletext reappears.
- Press **●** to return to the normal teletext function.

Return to the contents

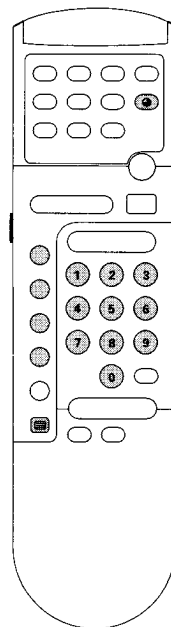
- Press **■** or the white button.
- ▷ The table of contents will appear.

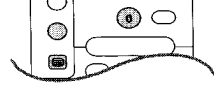
Temporary interrupt of the teletext display

The search for a page may sometimes be quite long. In the meantime, you may return to the picture broadcasted from the TV channel. Before interrupting teletext, you can select a page number.

- Press **X**.
- ▷ The TV channel appears.
- **■** indicates that you are still in the teletext mode. When the page has been found, the information line appears on your screen.
- Press **X** again.
- ▷ Teletext reappears.

*Teletext can always be switched off by pressing **■**.*





- Press the red button or the blue button on the remote control to select either the previous or the following page.
- or Certain teletext systems allow a quicker access to the headings; in this case the section names are displayed in the option line.
- Select the desired subject with the corresponding colour button on the remote control.

5 6

Peripheral connections

Using the TV remote control for the videorecorder

You can use your TV remote control to operate most of the videorecorders of our range.

- Press and hold the VCR button, then press the buttons you need to operate your videorecorder. Refer to the videorecorder instruction for use to see the related buttons and functions.

Aerial connection

You can connect your videorecorder or other equipment via the aerial connection on the back of the TV.

- Unplug the aerial plug from your TV and insert it into the aerial input of your equipment.
- Connect another aerial plug to the output of your equipment, connect the other side to the aerial input of your TV.
- Switch on your equipment.
- Check in the handbook of the particular equipment to see what the test signal looks like.
- Now, refer to the section **Storing TV channels** to search for and store this signal on a programme number from 1 to 69 (you cannot store the signal on the program number 0). After that, you can receive signals from your equipment on this programme number.

Euroconnection (scart) for e.g. videorecorder

You can connect for example a videorecorder or satellite tuner to your TV via the euroconnector socket on the back of the TV. Ask your dealer for the appropriate cable.

- Connect the eurocable to the euroconnector socket of your videorecorder and to the euroconnector socket of your TV.
 - Connect an aerial cable to the output of your video recorder and to the aerial input of your TV.
 - Normally if the videorecorder is switched on, the picture will automatically appear on the TV screen.
- If you do not see the picture, select program number 0 by pressing P+ or -.*

NOTE: If you do not see the picture from the connected videorecorder, check by the "Menu on screen" (EXTERNAL item), if program 0= AV has been selected properly.

Do not use the Audio-Video front socket and the euroconnector socket at the same time.

Euroconnection (scart) for audio amplifier

An external audio amplifier can be used to listen to your TV sound. In this case you need a special euroconnector cable, provided with audio out plugs. Ask your dealer for an appropriate cable.

- Connect the audio plugs into the audio input of your audio amplifier.
- Connect the euroconnector into the euroconnector socket of your TV.

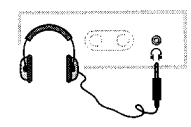
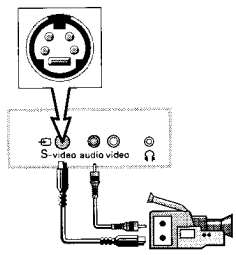
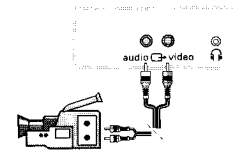
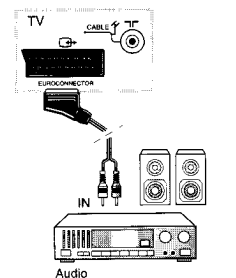
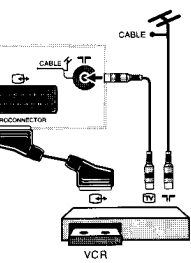
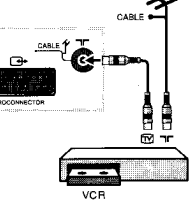
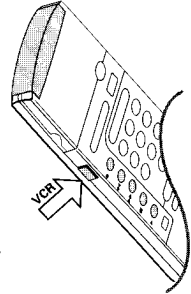
Audio/Video front connections

You can connect audio/video equipment, like a camcorder or game-computer, to the Audio/Video input on the front of your TV. Ask your dealer for an appropriate cable.

- Connect your equipment to the Audio/Video input of your TV.
- Press START or PLAY on your equipment.
- Select program number 0.
- The picture from your equipment appears on the screen.

Do not use the Audio-Video front socket and the euroconnector socket at the same time.

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S-Video front connection

The S-Video socket is only present on certain TV models.

You can connect S-VHS or Hi-8 audio-video equipment to the S-Video socket on the front of your TV. Ask your dealer for an appropriate cable.

- Connect your equipment to the S-Video socket of your TV.
- Press several times MENU on the remote control until EXTERNAL appears.
- Press + to select S-Video.
- Press MENU several times to leave the menu on screen.
- Press START or PLAY on your equipment.
- Select program number 0.
- The picture from your equipment appear on the screen.

NOTE: If you do not see the picture from the connected equipment, check by the "Menu on screen" (EXTERNAL item), if program 0= S-Video has been selected properly.

Do not use the S-Video socket and the Euroconnector or Audio/Video socket at the same time.

Headphones

- Connect the headphones plug to the headphones socket on front of the TV.
- The internal loudspeakers of your TV are automatically switched off.

Tips

To clean the TV

Clean the TV using a slightly damp chamois leather. **Never use aggressive cleaning agents.**

Poor or no picture:

Are the plugs tightly connected to the aerial socket and are the connection facilities to any other installed TV in good condition? Do you use good quality aerial connectors and cables?

Double or black and white picture on the screen using peripheral connections:

NOTE: If you do not see the picture from the connected equipment, check by the "Menu on screen" (EXTERNAL item), if S-Video (for S-VHS or Hi-8 audio-video equipment socket) or AV (for euroconnector or front Audio/Video socket) has been selected properly.

No solution:

Switch your TV off and on again with the D button.

Never attempt to repair a defective TV set yourself.

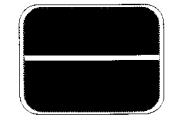
Switch off the TV and call your dealer or TV-technician when nothing helps or when:

- A white horizontal stripe appears across the whole screen.
- The red lamp below the screen starts blinking when no buttons are pressed on the remote control.

Environmental information

Your TV contains material which can be recycled and reused. At end of life specialized companies can dismantle the discarded TV to concentrate the reusable materials and to minimize the amount of materials to be disposed off.

Please find out about local regulations on disposal of your old TV set.



10. List of abbreviations

List of abbreviations (incl. all signal names)

		IDENT.VCR
+183V (+163V)	+183V/163V supply voltage from the LOT to the picture tube panel	IDENT1
+86V	+100V/92V5/86V supply voltage from the SMPS to the line output stage and the tuning system	IDENT2
+29V	+29V supply voltage from the LOT to the frame amplifier IC7400	IF
+12S	+12V supply voltage from the SMPS to the sound output amplifier and the line drive circuitry	IVT
+8A	+8V supply voltage from the SMPS for the whole small signal part	L/L'
+8L	+8V supply voltage from the LOT to the supply voltages +5C and +5D for teletext processing	
+5A	+5V supply voltage from the SMPS to the μ C and periphery	
+5C	+5V supply voltage from +8L to teletext processing	
+5D	+5V supply voltage from +8L to teletext processing	
+5F	+5V supply voltage from +8L to teletext processing	
+5G	+5V supply voltage from the SMPS for the LED and the keyboard	
μ C	Microcomputer	NIL
16/9	Switching signal from the μ C to the frame amplifier used for switching the frame output stage in 16/9 mode; "high" for 4/3, "low" for 16/9	OSD FAST BL
AFC	Automatic Frequency Control	OSD-G
AGC THR	DC input signal from the IF-detector IC7015-6B to the μ C which gives the value of the AGC control (only used by the factory to timely increase the tuning speed)	POR
AGC	Automatic Gain Control	PP
AM SOUND/AUDIO IN	AM demodulated sound signal or AUDIO-IN signal from scart or audio cinch; this signal is fed to IC7015-6F for source select	PROT
AQUA	Aquadag on the rear side of the picture tube to pin 8 of the LOT	
ATS	Automatic Table Setting (auto install system for Germany only)	
AUDIO-IN	Incoming audio signal from pin 2 and 6 from scart or the audio cinch. Both signals go to source select IC7140	
AUDIO-OUT	Outgoing audio signal from pin 15 IC7140 to pin 1 and 3 from scart	R-SCART
AV+C	AV switching signal (0V aerial, 4V SVHS, 8V scart) with chrominance part of the SVHS signal (C) superimposed on it	R-TXT
B-SCART	Blue input signal from the scart to the video controller IC7015-6D	RAM
B-TXT	Blue input signal from the teletext decoder to the video controller IC7015-6D	ROM
BAND-1	Switching signal from μ C for bandswitching to the 2 to 3 decoder IC7002	SANDCASTLE
BAND-2	Switching signal from μ C for bandswitching to the 2 to 3 decoder IC7002	SANDCASTLE
BASEBAND CVBS	Baseband CVBS signal from the IF-detector IC7015-6B to the FM-demodulator IC7015-6F	SATURATION
BCI	Beam Current Info; If beam current increases the BCI signal decreases. BCI is used for contrast reduction (if beam current is too high) and picture correction (if beam current increases (more white), EHT decreases so picture will become too big, BCI decreases and the picture will be corrected)	SAW
BG//DK/LL'	Sound system BG//DK/LL' indicates frequency distance between sound and picture carriers (5.5 MHz for BG, 6.0 MHz for I, 6.5 MHz for DK and LL')	SCL
BG/L	Switching signal from μ C; "low" for BGDK reception (negative modulation, FM sound), "high" for LL' reception (positive modulation, AM sound). The μ C makes BG/L "low" in case EUROPE or UK is selected, and "high" in case FRANCE is selected	SDA
BG/I	Switching signal from μ C; "low" for I reception (6.0 MHz FM sound), "high" for BG reception (5.5 MHz FM sound). The μ C makes BG/I "low" in case UK is selected, and "high" in case EUROPE or FRANCE is selected	SDM
BRIGHTNESS	Control signal (from μ C, but on DC level via RC network) for brightness control of the video controller IC7015-6D (0-5V)	SHARPNESS
C	Chrominance part of the video signal; this signal is also directly input at the SVHS plug	SM
CCT	Computer Controlled Teletext	SMPS
CONTRAST	Control signal (from μ C, but on DC level via RC network) for contrast control of the video controller IC7015-6D and the teletext decoder (0-4V5)	STANDBY
CVBS	Colour Video Blanking Synchronisation	STATUS
CVBS-EXT	Incoming CVBS signal from pin 20 of scart to the external input pin 15 IC7015-6B	TOP
CVBS-INT	Outgoing CVBS signal from sound trap on pin 7 IC7015-6A (IF detector) to output pin 19 of scart	μ P INT/EXT
CVBS-TXT	CVBS signal coming from the CVBS-INT or CVBS-EXT (IC7140 source select) to the teletext decoder	V.DRIVE
EEPROM	Electrical Erasable Programmable Read Only Memory	V-vari
ESD	Electrical Static Discharge	VERT FEEDB.
EXTERNAL 2 (SVHS)	Switching signal from μ C to input circuitry IC7015-6B; "high" for SVHS mode, "low" for non-SVHS mode	Vg2
FAST BLANKING	Fast blanking signal made by adding the OSD, TXT and SCART fast blanking signals.	VIP
FAST-BL-SCART	Fast blanking input signal from scart which is added to the other fast blanking signals to control the video controller IC7015-6D	VOLUME
FAST-BL-TXT	Fast blanking signal from teletext which is added to the other fast blanking signals to control the video controller IC7015-6D	WST
ff	Filament (heater voltage) from LOT to the picture tube	Y
FLOF	Full Level One Feature	
FM	FM demodulated sound from the FM-demodulator IC7015-6F to source select IC7140	
G-SCART	Green input signal from the scart to the video controller IC7015-6D	
G-TXT	Green input signal from the teletext decoder to the video controller IC7015-6D	
H.DRIVE	Horizontal drive signal from IC7015-6E to line output stage	
HOR FLYBACK	Horizontal flyback pulse (15625 Hz) used for locking the horizontal oscillator in IC7015-6E	
I ² C	Digital control bus of the microcomputer	

IDENT.VCR	Status signal which is "high" in external mode; this signal overrides the IDENT from IC7015-6A as otherwise the TV would switch "off" after 15 minutes (normally if 15 minutes no IDENT the μ C will switch off the set)
IDENT1	IDENT signal coming from IC7015-6A used for muting the AM sound signal in case no CVBS is detected. IDENT1 is "high" in case CVBS is detected and so TS7142 only conducts in case CVBS is detected by IC7015.
IDENT2	Status signal from IC7015-6B; "low" for no CVBS signal (horizontal sync not present), "high" in case CVBS signal is present (horizontal sync present) from the IF-detector IC7015-6B to the μ C
IF	Intermediate frequency signal from the tuner to the AM-demodulator IC7125
IVT	Integrated Video input processor and Teletext decoder
L/L'	Switching signal from μ C; "low" for BGDKL (picture at 38.9 MHz) reception, "high" for L' reception (picture at 33.4 MHz). In case FRANCE is selected and the tuning is in the lower part of the VHF1 band, the μ C makes L/L' "high" In case FRANCE is selected and the tuning is in the upper VHF1 or VHF3 or UHF band, the μ C makes L/L' "low". Also in case EUROPE and UK is selected the μ C makes L/L' "low".
NIL	Non Inter Laced; 25 Hz block-shaped signal from teletext to the frame amplifier for coinciding the odd & even frames
OSD FAST BL	Fast blanking info from OSD generator in μ C to video controller IC7015-6D for blanking the RGB info to enable OSD-G insertion which is added to the other fast blanking signals to control video controller IC7015-6D
OSD-G	Green info from OSD generator in μ C to the video controller IC7015-6D for inserting green OSD info on the screen
POR	Power On Reset; ensures the μ C starts up its software only if the power supply of the μ C itself is high enough
PP	Personal Preference
PROT	Protection signal from frame IC7400; in case the vertical flyback generator in IC7400 is not activated, the voltage on pin 8 IC7400 becomes < 2V. By then the protection circuit in IC7400 will make pin 7 "high" overriding the HOR FLYBACK and SANDCASTLE. The constant "high" sandcastle is fed to the chrominance decoders (IC7015-6D and IC7250) and so the picture will become "black"
R-SCART	Red input signal from the scart to the video controller IC7015-6D
R-TXT	Red input signal from the teletext decoder to the video controller IC7015-6D
RAM	Random Access Memory
ROM	Read Only Memory
SANDCASTLE1	Sandcastle signal from IC7015-6F to delay line IC7271 and SECAM chroma decoder IC7250
SANDCASTLE2	Sandcastle signal from IC7015-6F to μ C
SATURATION	Control signal (from μ C, but on DC level via RC network) for saturation control of the video controller IC7015-6D (0-2V5)
SAW	Surface Acoustic Wave; high precision bandpass filter
SCL	Clock line of the I ² C-bus
SDA	Data line of the I ² C-bus
SDM	Service Default Mode; predefined mode for faultfinding (see chapter 8)
SHARPNESS CONTROL	Control signal on DC level (0-5V) from μ C to IF-detector IC7015-6B) for sharpness control
SM	Service Menu
SMPS	Switched Mode Power Supply
STANDBY	Switching signal from μ C; "low" for standby (power supply will be switched to stand-by mode), "high" for normal operation
STATUS	Switching signal; "high" for internal CVBS, "low" for external CVBS; "low" in case uP INT/EXT is "high" and/or pin 8 of the scart is "high")
TOP	Table Of Pages
uP INT/EXT	Switching signal from the μ C for internal or external audio + video switching ("low" for internal and "high" for external). This uP INT/EXT signal together with pin 8 of the scart makes the switching signal STATUS
V.DRIVE	Vertical drive signal from IC7015-6E to frame amplifier IC7400
V-vari	Tuning voltage from μ C to the tuner (0-30V DC)
VERT FEEDBACK	50 Hz vertical flyback pulse used for locking the vertical oscillator in IC7015-6E
Vg2	Voltage on grid 2 of the picture tube
VIP	Video Input Processor
VOLUME	Control signal (from μ C, but on DC level via RC network) for volume control of sound processing in IC7015-6F
WST	World System Teletext
Y	Luminance part of the video signal; this signal is also directly input at the SVHS plug

11. Spare parts list / Stükliste / Liste des pièces

Main carrier 21" AA5 AB only [A1-A9]

Various

▲	4822 256 92053	Fuse holder
▲	4822 276 12597	Mains switch
	4822 276 13307	Control knob assy
	4822 492 71655	Spring for TS7157
	4822 492 70559	Spring for TS7445
▲	4822 492 70158	Spring for TS7540-7400
	4822 256 91918	LED holder
	4822 404 31451	RC holder
	4822 404 31452	Tuner bracket
	4822 404 31503	SMPS transformer bracket
	4822 267 41224	SVHS connector
	4822 265 20626	2 fold AV cinch connector
	4822 267 31292	Headphone connector
▲	4822 265 30389	2 pins male for degaussing
▲	4822 265 40596	2 pins male for mains
	4822 264 40207	3 pins male
	4822 265 30378	4 pins male
	4822 265 40421	6 pins male
▲	4822 267 60243	21 pins euroconnector
1001▲	4822 210 10448	UV915E/IEC
1001▲	4822 210 10459	UV913/IEC
1001▲	4822 210 10464	U943C/IEC
1001▲	4822 210 10554	UV917/IEC
1015	4822 242 70936	OFWJ1952
1015	4822 242 72197	OFWKN2950M
1015	4822 242 81388	OFWG1961M
1015	4822 242 81737	OFWG1965M
1032	4822 242 72211	5.5 MHz
1032	4822 242 81712	TPWA04B
1033	4822 153 30025	6.0 MHz
1033	4822 242 81301	6.5 MHz
1101	4822 242 81423	OFWL9453M
1135	4822 242 70714	5.5 MHz
1135	4822 242 71841	6.0 MHz
1136	4822 242 71713	6.0 MHz
1136	4822 242 72057	6.5 MHz
1272	4822 242 81996	4.433619 MHz
1449▲	4822 071 54001	Fuse 400 mA
1500▲	4822 070 33152	Fuse 3.15 A
1501▲	4822 070 33152	2183.15(3.15A)
1540▲	4822 071 58001	Fuse 800 mA
1550	4822 071 51001	Fuse 100 mA
1568	4822 526 10405	Bead
1569	4822 526 10405	Bead
1571▲	4822 071 56301	Fuse 630 mA
1572▲	4822 252 51173	Fuse 1.000 mA
1640	4822 071 51001	Fuse 100 mA
1679	4822 242 73769	4.19 MHz
1685	4822 212 30842	TFMS5360 RC receiver
1685	4822 218 20981	LTM8848A RC receiver
1701	4822 242 81502	27.000 000 MHz
1702	4822 242 81002	6.00 MHz
1710▲	4822 071 51601	Fuse 160 mA

-II-

2001	4822 124 80791	470µF 20% 16V
2007	4822 126 12944	47nF 10% 50V
2008	5322 122 32967	5.6pF 10% 63V
2010	4822 126 10326	180pF 5% 63V
2011	5322 122 32661	56pF 5% 50V
2012	4822 124 42058	33µF 20% 50V
2013	5322 122 31944	3.9pF 5% 50V
2014	5322 126 10343	1.8pF 5% 63V
2015▲	4822 124 41525	100nF 20% 25V
2016	4822 126 10002	100nF 20% 25V
2017▲	4822 124 41579	10µF 20% 50V
2019	4822 124 22263	220µF 20% 25V
2021	4822 124 22263	220µF 20% 25V
2022	4822 126 10002	100nF 20% 25V
2025	4822 124 40763	2.2µF 100V
2025	4822 124 40769	4.7µF 20% 100V
2030	4822 126 10002	100nF 20% 25V
2031	4822 121 42408	220nF 5% 63V
2034	4822 126 12944	47nF 10% 50V
2037	4822 126 13061	220nF 20% 25V
2041▲	5322 126 10223	4.7nF 10% 63V
2043▲	5322 126 10223	4.7nF 10% 63V
2044▲	5322 126 10223	4.7nF 10% 63V
2045	4822 122 32139	12pF 2% 63V
2045	5322 122 32448	10pF 5% 50V
2050	4822 126 13296	100nF 10% 16V
2053	4822 126 13296	100nF 10% 16V
2080▲	5322 122 32654	22nF 10% 63V
2082	4822 124 40763	2.2µF 100V

2084	4822 126 13296	100nF 10% 16V
2101▲	5322 126 10223	4.7nF 10% 63V
2112	4822 122 33891	3.3nF 10% 63V
2117▲	5322 126 10223	4.7nF 10% 63V
2123	4822 122 31644	2.2nF 10% 63V
2124▲	4822 124 41579	10µF 20% 50V
2125▲	5322 122 32654	22nF 10% 63V
2126	4822 124 40769	4.7µF 20% 100V
2127	4822 124 40763	2.2µF 100V
2128	5322 122 32531	100pF 5% 50V
2129▲	4822 124 41579	10µF 20% 50V
2151▲	4822 122 33177	10nF 20% 50V
2152	4822 124 40763	2.2µF 100V
2153	5322 122 32531	100pF 5% 50V
2154	4822 122 33175	2.2nF 20% 50V
2155	5322 121 42661	330nF 5% 63V
2156	4822 126 13061	220nF 20% 25V
2157▲	4822 124 41525	100µF 20% 25V
2157▲	5322 122 34123	1nF 10% 50V
2158▲	5322 126 10223	4.7nF 10% 63V
2161	4822 124 22263	220µF 20% 25V
2161	4822 124 80791	470µF 20% 16V
2162	4822 122 33575	220pF 5% 50V
2163	4822 124 40756	1µF 20% 100V
2163	4822 124 40763	2.2µF 100V
2169	4822 122 33515	82pF 5% 63V
2170▲	4822 122 33177	10nF 20% 50V
2171▲	5322 126 10223	4.7nF 10% 63V
2180▲	4822 124 41579	10µF 20% 50V
2196	4822 124 80927	3.3µF 20% 50V
2230	4822 122 33805	330pF 10% 63V
2239	4822 126 13296	100nF 10% 16V
2240	4822 126 13296	100nF 10% 16V
2241	5322 126 10511	1nF 5% 50V
2248▲	4822 124 41579	10µF 20% 50V
2261▲	4822 122 33177	10nF 20% 50V
2262	4822 126 13482	470nF 20% 16V
2263▲	5322 122 32654	22nF 10% 63V
2264▲	4822 122 33177	10nF 20% 50V
2265	4822 122 33575	220pF 5% 50V
2267	4822 126 13296	100nF 10% 16V
2268	4822 121 42408	220nF 5% 63V
2271▲	5322 122 32654	22nF 10% 63V
2272▲	5322 122 34123	1nF 10% 50V
2273▲	5322 122 34123	1nF 10% 50V
2274	4822 126 13296	100nF 10% 16V
2275	4822 126 13296	100nF 10% 16V
2279	4822 126 13296	100nF 10% 16V
2280	4822 126 13296	100nF 10% 16V
2290	4822 126 13296	100nF 10% 16V
2291▲	4822 122 33177	10nF 20% 50V
2292▲	4822 122 33177	10nF 20% 50V
2293▲	4822 122 33177	10nF 20% 50V
2295	4822 124 40756	1µF 20% 100V
2297	4822 124 22347	47µF 20% 50V
2340	5322 121 42386	100nF 5% 63V
2342	4822 124 40756	1µF 20% 100V
2345	5322 122 32531	100pF 5% 50V
2350▲	5322 126 10223	4.7nF 10% 63V
2351	4822 124 40756	1µF 20% 100V
2354▲	4822 122 33177	10nF 20% 50V
2366▲	5322 126 10223	4.7nF 10% 63V
2370	4822 124 40756	1µF 20% 100V
2371▲	5322 122 32654	22nF 10% 63V
2401	4822 122 31771	390pF 2% 63V
2401▲	4822 122 33172	390pF 5% 50V
2403	5322 121 42925	150nF 10% 100V
2404	4822 124 40785	330µF 20% 25V
2405	4822 124 40763	2.2µF 100V
2405	4822 124 40769	4.7µF 20% 100V
2413	4822 122 31644	2.2nF 10% 63V
2413	4822 122 33175	2.2nF 20% 50V
2414	4822 122 31784	4.7nF 10% 50V
2414▲	5322 126 10223	4.7nF 10% 63V
2415	4822 124 40255	100µF 20% 63V
2416	4822 122 32542	47nF 10% 63V
2416	4822 126 12944	47nF 10% 50V
2417	4822 124 41859	330µF 20% 35V
2442	4822 122 31175	1nF 10% 50V
2443	4822 124 22263	220µF 20% 25V
2444	4822 121 43139	180nF 10% 100V
2445▲	4822 126 11503	820pF 10% 2KV
2445▲	4822 126 13435	1.2nF 10% 2KV
2446▲	4822 121 70618	1.2nF 5% 1600V
2446▲	4822 121 70637	8.2nF 5% 1600V
2447	4822 121 42004	10nF 10% 400V
2448▲	4822 124 80096	47µF 200V
2450	4822 121 42634	560nF 5% 250V
2450▲	5322 121 44128	680nF 10% 250V
2451	5322 124 40641	10µF 20% 100V
2452	4822 124 80791	470µF 20% 16V
2453	4822 124 41334	47µF 20% 35V
2453	4822 124 41859	330µF 20% 35V
2455	4822 121 42004	10nF 10% 400V

2456▲	5322 122 34123	1nF 10% 50V
2460	4822 121 51385	33nF 20% 100V
2461	5322 122 31842	330pF 2% 63V
2461	5322 122 31863	330pF 5% 50V
2462	4822 122 33575	220pF 5% 50V
2463	4822 122 31947	100nF 20% 63V
2470	4822 124 81106	22µF 20% 250V
2482▲	5322 122 32654	22nF 10% 63V
2500▲	4822 126 13589	470nF 275V
2502▲	4822 126 11141	2.2nF 10% 1KV
2504	4822 121 42004	10nF 10% 400V
2504▲	4822 126 11141	2.2nF 10% 1KV
2505▲	4822 124 42104	68µF 20% 385V
2505	4822 157 71702	150µF 20% 385V
2506▲	4822 126 10727	3.3nF 20% 400V
2506▲	4822 126 11141	2.2nF 10% 1KV
2507	4822 121 42004	10nF 10% 400V
2509	4822 124 22347	47µF 20% 50V
2511	4822 122 31767	150pF 2% 63V
2511▲	4822 126 11141	2.2nF 10% 1KV
2512▲	4822 126 11141	2.2nF 10% 1KV
2514	4822 126 12038	68pF 2% 63V
2515	4822 126 12038	68pF 2% 63V
2517	5322 121 42498	680nF 5% 63V
2520	4822 122 32891	68nF 10% 63V
2521	4822 126 13498	82pF 5% 50V
2522	4822 122 31746	1nF 2% 63V
2522	4822 126 13501	1.5nF 10% 50V
2523	4822 122 31746	1nF 2% 63V
2524▲	4822 126 11382	1nF 10% 1KV
2524	5322 121 42386	100nF 5% 63V
2525▲	4822 124 41525	100µF 20% 25V
2526	4822 126 13499	220pF 5% 50V
2527	4822 121 43856	4.7nF 5% 250V
2529	4822 121 51093	6.8nF 5% 250V
2530▲	4822 124 80096	47µF 200V
2530	5322 121 42386	100nF 5% 63V
2531	4822 121 51231	820pF 1% 400V
2532	4822 126 11157	470pF 10% 500V
2533	4822 122 31981	33nF ±0.5pF 50V
2533	4822 124 40763	2.2µF 100V
2534	4822 122 33302	1nF 5% 50V
2534▲	4822 126 11524	1.5nF 10% 1KV
2535	4822 126 13501	1.5nF 10% 50V
2536	4822 122 33307	10nF 5% 50V
2540	4822 124 40214	1000µF 20% 25V
2540▲	4822 126 13337	220pF 10% 1KV
2541	4822 122 31175	1nF 10% 500V
2545	4822 124 40769	4.7µF 20% 100V
2547	4822 122 31746	1nF 2% 63V
2550	4822 121 42786	33 nF 2% 100V
2550▲	4822 126 10727	3.3nF 20% 400V
2552▲	4822 126 11382	1nF 10% 1KV
2553	4822 122 31727	470pF 2% 63V
2555	4822 122 31797	22nF 10% 63V
2556	4822 122 31784	4.7nF 10% 50V
2557	4822 122 31784	4.7nF 10% 50V
2560	4822 124 40214	1000µF 20% 25V
2561	4822 124 41596	22µF 20% 50V
2562	4822 122 31727	470pF 2% 63V
2563	4822 122 31727	470pF 2% 63V
2563	4822 124 80791	470µF 20% 16V
2565	4822 121 42408	220nF 5% 63V
2568▲	4822 126 12274	1500pF 10%R(HR) 2KV
2569▲	4822 124 80096	47µF 200V
2570	4822 121 51379	82nF 5% 63V
2572	4822 126 13461	680pF 10% 50V
2573	4822 122 31772	47pF 2% 63V
2573	4822 124 40723	2200µF 20% 16V
260		

3246	4822 051 20103	10k 5% 0.1W	3456	4822 053 21224	220k 5% 0.5W	3573	4822 116 52284	47k 5% 0.5W	3722▲	4822 051 20472	4k7 5% 0.1W	5551
3248	4822 051 20103	10k 5% 0.1W	3457	4822 051 20104	100k 5% 0.1W	3574	4822 051 10104	100k 2% 0.25W	3723	4822 051 20333	33k 5% 0.1W	5554
3250	4822 051 20103	10k 5% 0.1W	3459	4822 051 20222	2k2 5% 0.1W				3724	4822 051 20332	3k3 5% 0.1W	5560▲
			3460	4822 051 10273	27k 2% 0.25W	3579	4822 116 52299	7k5 5% 0.5W	3727	4822 051 20473	47k 5% 0.1W	5565
3256	4822 051 10102	1k 2% 0.25W	3460	4822 051 20473	47k 5% 0.1W	3601	4822 116 83864	10k 5% 0.5W	3728	4822 051 20103	10k 5% 0.1W	5567
3257▲	4822 116 83953	75Ω 5% 0.125W	3461	4822 051 20473	47k 5% 0.1W	3602	4822 116 52303	8k2 5% 0.5W	3729	4822 051 20221	220Ω 5% 0.1W	5572
3258	4822 116 52256	2k2 5% 0.5W	3462	4822 117 11158	62k 5% 0.1W	3603	4822 051 20243	24k 5% 0.1W	3731	4822 051 20471	470Ω 5% 0.1W	5601▲
3259	4822 051 20182	1k8 5% 0.1W	3463	4822 051 10273	27k 2% 0.25W	3604	4822 051 20339	33Ω 5% 0.1W				5671
3262	4822 051 10104	100k 2% 0.25W				3605	4822 051 20224	220k 5% 0.1W	3732	4822 051 10102	1k 2% 0.25W	5674
3269	4822 051 20223	22k 5% 0.1W	3463	4822 117 11158	62k 5% 0.1W	3606	4822 051 20222	2k2 5% 0.1W	3733	4822 051 10102	1k 2% 0.25W	5677
3284	4822 116 52202	82Ω 5% 0.5W	3464	4822 051 10273	27k 2% 0.25W	3607	4822 051 20332	3k3 5% 0.1W	3734	4822 051 20681	680Ω 5% 0.1W	5701
3285	4822 116 52202	82Ω 5% 0.5W	3464	4822 117 11158	62k 5% 0.1W	3608▲	4822 051 20472	4k7 5% 0.1W	3735	4822 051 20561	560Ω 5% 0.1W	5704
3286	4822 116 52202	82Ω 5% 0.5W	3465	4822 051 10154	150k 2% 0.25W	3610	4822 051 20153	15k 5% 0.1W	3736	4822 051 20473	47k 5% 0.1W	5734
3291	4822 051 20562	5k6 5% 0.1W	3466	4822 051 10154	150k 2% 0.25W				3737	4822 051 10102	1k 2% 0.25W	5747
			3469▲	4822 052 10478	437 5% 0.33W	3611	4822 051 20103	10k 5% 0.1W	3738	4822 051 20473	47k 5% 0.1W	5752
3292▲	4822 051 10103	10k 2% 0.25W	3470▲	4822 052 10828	832 5% 0.33W	3612	4822 051 20103	10k 5% 0.1W	3740	4822 051 20122	1k2 5% 0.1W	
3292	4822 051 20103	10k 5% 0.1W	3480	4822 116 52245	150k 5% 0.5W	3615	4822 051 20473	47k 5% 0.1W	3741	4822 051 20122	1k2 5% 0.1W	
3293	4822 051 20822	8k2 5% 0.1W	3481	4822 051 10123	12k 5% 0.1W	3617▲	4822 051 20472	4k7 5% 0.1W	3742	4822 051 20122	1k2 5% 0.1W	
3294	4822 051 20183	1k8 5% 0.1W	3482	4822 051 20273	27k 5% 0.1W	3618	4822 051 10332	3k3 2% 0.25W				
3294	4822 051 20332	3k3 5% 0.1W				3619	4822 050 11002	1k 1% 0.4W	3749▲	4822 053 10159	15Ω 5% 1W	6042
3295▲	4822 051 10103	10k 2% 0.25W	3501▲	4822 116 40137	PTC 36Ω 365V	3620	4822 116 83864	10k 5% 0.5W	3749	4822 053 10828	832 5% 1W	6053▲
3296	4822 116 52215	220Ω 5% 0.5W	3503▲	4822 053 21475	4M7 5% 0.5W	3621	4822 051 10223	22k 2% 0.25W	3751	4822 051 20271	270Ω 5% 0.1W	6110
3297	4822 051 20151	150Ω 5% 0.1W	3504▲	4822 053 21475	4M7 5% 0.5W	3623▲	4822 051 10103	10k 2% 0.25W	3752	4822 051 20101	100Ω 5% 0.1W	6111
3298	4822 051 20151	150Ω 5% 0.1W	3506▲	4822 116 40137	PTC 36Ω 365V	3624	4822 051 20104	100k 5% 0.1W	3756	4822 051 20103	10k 5% 0.1W	6112
3299	4822 051 20151	150Ω 5% 0.1W	3507	4822 053 11823	82k 5% 2W				3760▲	4822 051 20472	4k7 5% 0.1W	6112
			3509	4822 116 83864	10k 5% 0.5W	3625	4822 051 10333	33k 2% 0.25W	3761▲	4822 051 20472	4k7 5% 0.1W	6113▲
3301	4822 053 11478	4Ω 7 5% 2W	3510	4822 053 21184	180k 5% 0.5W	3628	4822 051 20333	33k 5% 0.1W	3764	4822 051 20101	100Ω 5% 0.1W	6115
3306▲	4822 051 20008	0Ω jumper SMD	3510	4822 116 52271	33k 5% 0.5W	3630	4822 117 11651	360k 5% 0.1W	3765	4822 051 20101	100Ω 5% 0.1W	6116
3306	4822 051 20153	15k 5% 0.1W	3511	4822 051 10102	1k 2% 0.25W	3631	4822 051 10154	150k 2% 0.25W	3768	4822 116 52175	100Ω 5% 0.5W	6128
3340	4822 051 20155	1M5 5% 0.1W	3513	4822 051 10223	22k 2% 0.25W	3631	4822 051 20154	150k 5% 0.1W				6141▲
3340	4822 051 20475	4M7 5% 0.1W				3632	4822 051 10102	1k 2% 0.25W	3769	4822 051 20271	270Ω 5% 0.1W	6170
3341	4822 051 20125	1M2 5% 0.1W	3514	4822 116 52278	390k 5% 0.5W	3636	4822 051 20103	10k 5% 0.1W	3770	4822 051 20101	270Ω 5% 0.1W	6171
3341	4822 051 20475	4M7 5% 0.1W	3515	4822 051 10471	470Ω 2% 0.25W	3637	4822 051 20101	100Ω 5% 0.1W	3781	4822 051 10822	8k2 2% 0.25W	6276
3345▲	4822 052 10109	10Ω 5% 0.33W	3516	4822 051 10101	100k 2% 0.25W	3638	4822 051 20331	330Ω 5% 0.1W	3786	4822 051 10210	1k 2% 0.25W	6289
3345▲	4822 052 11471	470Ω 5% 0.5W	3517	4822 116 52206	120Ω 5% 0.5W	3639	4822 051 20271	270Ω 5% 0.1W	3850	4822 051 20562	5k6 5% 0.1W	6370
3347	4822 116 52296	6k8 5% 0.5W	3518	4822 051 10224	220k 2% 0.25W				3851▲	4822 116 83953	75Ω 5% 0.125W	6415
			3520	4822 051 10184	180k 2% 0.25W	3640	4822 051 20222	2k2 5% 0.1W	3852	4822 051 20562	5k6 5% 0.1W	6416
3351	4822 051 20153	15k 5% 0.1W	3520	4822 053 11473	47k 5% 2W	3641	4822 051 20103	10k 5% 0.1W	3853▲	4822 116 83953	75Ω 5% 0.125W	6418
3353	4822 051 20824	820k 5% 0.1W	3521	4822 053 11209	20k 5% 0.5W	3642	4822 051 20104	100k 5% 0.1W	3855▲	4822 116 83953	75Ω 5% 0.125W	6441
3354	4822 100 11483	10k 30% 0.1W	3521	4822 116 52304	82k 5% 0.5W	3647	4822 116 52283	4k7 5% 0.5W	3858▲	4822 116 83953	75Ω 5% 0.125W	6442
3368	4822 116 52284	47k 5% 0.5W	3522	4822 053 11569	56Ω 5% 2W	3648	4822 116 52283	4k7 5% 0.5W				6443
3369	4822 051 20273	27k 5% 0.1W				3649	4822 116 52243	1k5 5% 0.5W	3860	4822 051 20471	470Ω 5% 0.1W	6444
3369	4822 116 83874	220k 5% 0.5W	3522	4822 116 52219	330Ω 5% 0.5W	3651	4822 051 20103	10k 5% 0.1W	3862	4822 051 20471	470Ω 5% 0.1W	6449
3370	4822 051 20123	12k 5% 0.1W	3523	4822 050 24708	437 1% 0.6W	3652	4822 116 52283	4k7 5% 0.5W	3863	4822 051 20223	22k 5% 0.1W	6451
3370	4822 051 20183	1k8 5% 0.1W	3523	4822 116 52254	20k 5% 0.5W	3653	4822 116 52283	4k7 5% 0.5W	3864	4822 116 52289	5k6 5% 0.5W	6452
3371	4822 051 10123	12k 2% 0.25W	3524▲	4822 052 10229	22Ω 5% 0.33W	3654	4822 051 10102	1k 2% 0.25W	3871	4822 116 52215	220Ω 5% 0.5W	6453
3371	4822 051 20123	12k 5% 0.1W	3525	4822 053 11209	20k 5% 2W				3871	4822 116 52219	330Ω 5% 0.5W	6462
			3525	4822 116 52252	180k 5% 0.5W	3655	4822 051 20272	2k7 5% 0.1W	3875▲	4822 116 83953	75Ω 5% 0.125W	6463
3401▲	4822 052 10222	2k2 5% 0.33W	3526	4822 116 52217	270Ω 5% 0.5W	3656	4822 116 52283	4k7 5% 0.5W	3876	4822 051 10332	3k3 2% 0.25W	6470
3401	4822 052 10302	3k 5% 0.33W	3527	4822 116 81844	207 5% 0.5W	3658	4822 051 20272	2k7 5% 0.1W	3878	4822 051 20183	1k8 5% 0.1W	6471
3402	4822 117 11648	270Ω 5% 0.5W	3528▲	4822 050 24708	437 1% 0.6W	3659	4822 051 20821	820Ω 5% 0.1W	3879	4822 051 10473	47k 2% 0.25W	6471
3403	4822 116 52283	4k7 5% 0.5W	3529▲	4822 053 11689	68Ω 5% 2W	3660	4822 116 52175	100Ω 5% 0.5W				6472
3403	4822 116 52299	7k5 5% 0.5W				3661	4822 050 11002	1k 1% 0.4W	3880	4822 051 20562	5k6 5% 0.1W	6473
3403	4822 116 52303	8k2 5% 0.5W	3530	4822 050 21204	120k 1% 0.6W	3662	4822 051 20333	33k 5% 0.1W	3881	4822 051 20103	10k 5% 0.1W	6481▲
3404	4822 051 20432	4k3 5% 0.1W	3530	4822 115 10114	150Ω 10%	3663	4822 051 20151	150Ω 5% 0.1W	3887	4822 051 20471	470Ω 5% 0.1W	6502▲
3404▲	4822 051 20472	4k7 5% 0.1W	3531	4822 116 52254	20k 5% 0.5W	3664	4822 051 20333	33k 5% 0.1W	3888	4822 117 11319	1k5 1% 0.1W	6503▲
3405	4822 051 10331	330Ω 2% 0.25W	3532	4822 101 11189	4.7k 30% lin 0.1W	3665	4822 051 20683	68k 5% 0.1W	3889	4822 051 10751	750Ω 2% 0.25W	6504▲
3405	4822 051 20391	390Ω 5% 0.1W	3533	4822 050 24703	47k 1% 0.6W				3890	4822 051 20682	6k8 5% 0.1W	6505▲
			3533	4822 116 52238	12k 5% 0.5W	3666	4822 051 10151	150Ω 2% 0.25W	3891	4822 051 20103	10k 5% 0.1W	6509
3405	4822 051 20561	560Ω 5% 0.1W	3534	4822 051 10302	3k 2% 0.25W	3667	4822 116 83864	10k 5% 0.5W	3892	4822 116 52269	3k3 5% 0.5W	6510▲
3406	4822 051 10223	22k 2% 0.25W	3534	4822 116 83874	220k 5% 0.5W	3668	4822 051 20433	43k 5% 0.1W	4xxx	4822 051 10008	0Ω 5% 0.25W	6511▲
3406	4822 051 20223	22k 5% 0.1W	3535	4822 100 11794	1k 10% lin	3669	4822 051 20103	10k 5% 0.1W				6511
3406	4822 051 20273	27k 5% 0.1W	3536	4822 116 52264	27k 5% 0.5W	3670	4822 116 83864	10k 5% 0.5W				6512▲
3407	4822 051 20183	1k8 5% 0.1W				3671▲	4822 051 10103	10k 2% 0.25W				6513▲
3408▲	4822 052 10222	2k2 5% 0.33W	3537	4822 116 83864	10k 5% 0.5W	3671	4822 051 20103	10k 5% 0.1W				6513
3408▲	4822 053 10681	680Ω 5% 1W	3538	4822 116 52256	2k2 5% 0.5W	3672	4822 051 10102	1k 2% 0.25W	5010	4822 157 63081	0.56μH 20%	6514
3409▲	4822 051 10103	10k 2% 0.25W	3540	4822 117 11791	47Ω 5% 3W	3673	4822 051 20103	10k 5% 0.1W	5010	4822 157 63858	0.39μH 10%	6515
3410	4822 100 12225	330Ω	3541	4822 050 11002	1k 1% 0.4W	3674	4822 051 10102	1k 2% 0.25W	5012	4822 157 53539	0.27μH 5%	6516
3411▲	4822 052 10228	2k2 5% 0.33W	3544▲	4822 052 10108	1k 5% 0.33W							

5551	4822 157 71387	Bead 100 MHz
5554	4822 157 51157	3.3µH 10%
5560▲	4822 157 51462	10µH 10%
5565	4822 157 71387	Bead 100 MHz
5567	4822 157 71387	Bead 100 MHz
5572	4822 157 71466	2.2µH 20%
5601▲	4822 157 51462	10µH 10%
5671	4822 157 71703	82µH 5%
5674	4822 157 71387	Bead 100 MHz
5677	4822 157 53906	47µH 10%
5701	4822 157 60141	3.3µH 10%
5704	4822 157 60123	6.8µH 10%
5734	4822 157 53001	27µH 10%
5747	4822 157 60123	6.8µH 10%
5752	4822 157 71387	Bead MHz



6042	4822 130 80888	BA682
6053▲	4822 130 30621	1N4148
6110	4822 130 42488	BYD33D
6111	4822 130 80446	LL4148
6112	4822 130 34167	BZX79-F6V2
6112	4822 130 34174	BZX79-F4V7
6113▲	4822 130 30621	1N4148
6115	4822 130 80888	BA682
6116	4822 130 80888	BA682
6128	4822 130 80446	LL4148
6141▲	4822 130 30621	1N4148
6170	4822 130 80888	BA682
6171	4822 130 80888	BA682
6276	4822 130 80905	LLZ-F5V1
6289	4822 130 80446	BAS32L
6370	4822 130 82192	LLZ-C8V2
6415	4822 130 80446	LL4148
6416	4822 130 42488	BYD33D
6418	4822 130 30842	BAV21
6441	4822 130 34382	BZX79-F8V2
6442	4822 130 34382	BZX79-F8V2
6443	4822 130 42488	BYD33D
6444	4822 130 42488	BYD33D
6449	5322 130 32967	BYV26B
6451	4822 130 42488	BYD33D
6452	4822 130 42488	BYD33D
6453	4822 130 42488	BYD33D
6462	4822 130 30842	BAV21
6463	4822 130 30842	BAV21
6470	4822 130 42488	BYD33D
6471	4822 130 42488	BYD33D
6471	4822 130 42489	BYD33G
6472	4822 130 82305	LLZ-F18
6473	4822 130 20293	P0102BA
6481▲	4822 130 34499	BZX79-C20
6502▲	4822 130 31933	1N5061
6503▲	4822 130 31933	1N5061
6504▲	4822 130 31933	1N5061
6505▲	4822 130 31933	1N5061
6509	4822 130 34281	BZX79-F15
6510▲	4822 130 31933	1N5061
6511▲	4822 130 31933	1N5061
6511	4822 130 80446	LL4148
6512▲	4822 130 31933	1N5061
6513▲	4822 130 31933	1N5061
6513	4822 130 80446	LL4148
6514	4822 130 80446	LL4148
6515	4822 130 80446	LL4148
6516	4822 130 80888	LLZ-F28
6517	4822 130 31456	BZV85-C5V1
6521	4822 130 42488	BYD33D
6522▲	4822 130 30621	1N4148
6523	4822 130 80446	LL4148
6524▲	4822 130 31631	BYV10-20
6525	4822 130 42488	BYD33D
6530▲	4822 130 30621	1N4148
6530	4822 130 82033	BYD34J
6537	4822 130 34167	BZX79-F6V2
6540	4822 130 42488	BYD33D
6545	4822 130 42488	BYD33D
6549	4822 130 80446	LL4148
6554	4822 130 42489	BYD33G
6555	4822 130 82305	LLZ-F18
6557	4822 130 80887	LLZ-F36
6558	4822 130 80887	LLZ-F36
6559	4822 130 80887	LLZ-F36
6562	4822 130 80905	LLZ-F5V1
6566	4822 130 34174	BZX79-F4V7
6566	4822 130 42488	BYD33D
6568	4822 130 81147	LLZ-F6V2
6568▲	4822 130 81175	BYD74G
6569	4822 130 80446	LL4148
6570	4822 130 20293	P0102BA
6572	4822 130 80914	LLZ-F74B
6573	4822 130 80446	LL4148
6602	4822 130 82037	HZT33
6641	4822 130 34233	BZX79-F5V1
6642	4822 130 34174	BZX79-F4V7
6651	4822 130 80905	LLZ-F5V1
6658▲	4822 130 30621	1N4148
6663▲	4822 209 30563	TLXR6400
6679	4822 130 80446	LL4148
6704	4822 130 82886	LLZ-F3V0
6705	4822 130 80446	LL4148
6710	4822 130 81139	LLZ-C3V3

6751	4822 130 81227	LLZ-F5V6
6849▲	4822 130 30621	1N4148
6850	4822 130 80446	LL4148
6851	4822 130 80446	LL4148
6852	4822 130 80446	LL4148
6853	4822 130 80446	LL4148
6854	4822 130 80446	LL4148
6855	4822 130 80446	LL4148
6865	4822 130 80446	LL4148



7002	4822 209 10892	LA7910
7015	4822 209 33916	TDA8361E/N4
7015	4822 209 90128	TDA8362E/N4
7016	4822 209 81713	MC78M08CT
7030▲	5322 130 41982	BC848B
7125	4822 209 63105	TDA3843/V3
7126▲	5322 130 41982	BC848B
7127▲	5322 130 41982	BC848B
7140	5322 209 10576	4053B
7141▲	5322 130 41982	BC848B

7142▲	5322 130 41982	BC848B
7143▲	5322 130 41982	BC848B
7156	5322 130 41983	BC858B
7157	4822 209 32531	TDA7056A/N2
7170▲	5322 130 41982	BC848B
7242▲	5322 130 41982	BC848B
7243▲	5322 130 41982	BC848B
7250	4822 209 90129	TDA8395/N2

7271	4822 209 12635	TDA4665/V3
7400	4822 209 60955	TDA3653B/N2
7401	4822 209 33321	TDA3654/N3
7408▲	5322 130 41982	BC848B
7441	4822 130 41053	BC639
7442	4822 130 41327	BC327-40
7445	4822 130 63569	BU1508DX
7481	4822 130 20293	P0102BA

7512	5322 130 42136	BC848C
7514▲	4822 130 91451	CQY80NG
7515	4822 130 42513	BC858C
7516	5322 130 44349	BC635
7520	4822 209 90025	MC44603P
7525	4822 130 42679	BU711AF
7537	5322 130 60159	BC848B
7540▲	4822 130 63409	STP6N60FI
7552	4822 130 42155	BC327A
7553	5322 130 42012	BC858A

7554	4822 130 42032	BC337A
7555	5322 130 60159	BC848B
7556	4822 130 60373	BC858B
7561	4822 130 40823	BD135
7563	5322 130 41983	BC858B
7565	4822 130 40937	BC848B
7567▲	4822 209 80591	LM317T
7571▲	5322 130 41982	BC848B
7600	4822 209 90461	µC AA5 V3.0 (VST+PLL+ATS) PMBT2369

7605	4822 209 73852	PMBT2369
7640▲	5322 130 41982	BC848B
7641▲	4822 130 44197	BC558B
7642▲	4822 130 41344	BC337-40
7654▲	5322 130 41982	BC848B
7657▲	5322 130 41982	BC848B
7658	4822 209 73852	PMBT2369
7665▲	5322 130 41982	BC848B
7670▲	5322 130 41982	BC848B
7672▲	5322 130 41982	BC848B
7674▲	5322 130 41982	BC848B

7685	4822 209 62098	ST24C02A
7686▲	5322 130 41982	BC848B
7700	4822 209 90126	SAAS281P/H/M3
7700	4822 209 90131	SAAS281P/E/M3
7702	4822 209 30281	PCF84C81AP/097/ F2

7702	4822 209 33088	PCF84C81AP/144/ F2
7710▲	5322 130 41982	BC848B
7711▲	5322 130 41982	BC848B
7713▲	5322 130 41982	BC848B
7715▲	5322 130 41982	BC848B

7731	5322 130 41983	BC858B
7732▲	5322 130 41982	BC848B
7751▲	4822 130 41344	BC337-40
7754▲	5322 130 41982	BC848B
7755▲	5322 130 41982	BC848B
7856▲	5322 130 41982	BC848B
7857	5322 130 41983	BC858B
7858▲	5322 130 41982	BC848B
7875▲	5322 130 41982	BC848B
7876▲	5322 130 41982	BC848B

SECAM VCR identifier panel [A7]

Various

4822 212 31801	SECAM VCR identifier panel
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2269	5322 122 32531	100pF 5% 50V
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3307	4822 051 20473	47k 5% 0.1W
3308	4822 051 20154	150k 5% 0.1W
3309	4822 051 20224	220k 5% 0.1W
3310	4822 051 20684	680k 5% 0.1W
3311	4822 051 20103	10k 5% 0.1W
3312	4822 051 20124	120k 5% 0.1W
3313	4822 051 20184	180k 5% 0.1W



7262	5322 130 41982	BC848B
7263	5322 130 41982	BC848B
7264	5322 130 41982	BC848B

CRT panel mini neck (14-15-17-21") [B1]

Various

4822 212 31799	CRT panel 14" mini neck
4822 212 31797	CRT panel 15-17- 21" mini neck
4822 255 70306	Holder valve mini neck



2204	4822 122 33805	330pF 10% 63V
2206	4822 124 81107	4.7µF 20% 250V
2217	4822 122 33805	330pF 10% 63V
2230	4822 122 33805	330pF 10% 63V
2237	4822 121 41926	33nF 5% 630V
2282▲	5322 122 32654	22nF 10% 63V



3201	4822 116 52252	180k 5% 0.5W
3202	4822 053 12123	12k 5% 3W
3203	4822 050 21502	1k5 1% 0.6W
3204	4822 116 52175	100Ω 5% 0.5W
3205	4822 116 52211	150Ω 5% 0.5W
3206	4822 116 52207	1k2 5% 0.5W
3207	4822 100 11638	4k7 20% 0.1W
3208	4822 051 20331	330Ω 5% 0.1W
3209	4822 051 20569	56Ω 5% 0.1W
3210	4822 116 52289	5k6 5% 0.5W
3211	4822 116 52289	5k6 5% 0.5W
3212	4822 116 52289	5k6 5% 0.5W
3213	4822 100 11637	2k2 20% 0.1W
3214	4822 100 11637	2k2 20% 0.1W
3215	4822 053 12123	12k 5% 3W
3216	4822 050 21502	1k5 1% 0.6W
3217	4822 051 20331	330Ω 5% 0.1W
3218	4822 051 20569	56Ω 5% 0.1W
3219	4822 116 52207	1k2 5% 0.5W
3220	4822 100 11638	4k7 20% 0.1W
3221	4822 116 52175	100Ω 5% 0.5W
3222	4822 051 20391	390Ω 5% 0.1W
3223	4822 116 52211	150Ω 5% 0.5W
3224	4822 117 11139	1k5 1% 0.1W
3225	4822 051 20332	3k3 5% 0.1W
3226	4822 051 20271	270Ω 5% 0.1W
3227	4822 051 20681	680Ω 5% 0.1W
3228	4822 053 12123	12k 5% 3W
3229	4822 050 21502	1k5 1% 0.6W
3230	4822 051 20569	56Ω 5% 0.1W
3231	4822 116 52211	150Ω 5% 0.5W
3232	4822 051 20331	330Ω 5% 0.1W
3233	4822 116 52207	1k2 5% 0.5W
3234	4822 100 11638	4k7 20% 0.1W
3235▲	4822 052 10108	1Ω 5% 0.33W
3236	4822 050 21502	1k5 1% 0.6W
3237	4822 050 21502	1k5 1% 0.6W
3244	4822 116 52175	100Ω 5% 0.5W

Service
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AA5
95.01

Service Information

GB

1. New chassis for 14"-15"-17"-21" mini neck (neck diameter 20 mm) and 20"-25"-28" narrow neck (neck diameter 30 mm) AA5 sets

In 14-15-17-21" mini neck and 20"-25"-28" narrow neck AA5 sets with production code PM/QG 05 and higher, a new power supply is introduced. This new power supply is the SMPS power supply of the AA5 AB, in stead of the SOPS power supply of the AA5 AA. As a result the AA5 AB service manual can be used (on the rear side of these sets, AA5 AB is indicated) except for some component values. These different component values and there service codes are indicated in this service information. The PWB is the same as in the AA5 AB service manual.

To conclude: For 14"-15"-17"-21" mini neck and 20"-25"-28" narrow neck AA5 sets with PM/QG code 05 and higher, use the AA5 AB service manual (4822 727 20783 up to and included 4822 727 20788) together with this service information.

2. 110° East/West correction panel for 25" and 28" AA5 AB chassis (diagram C)

For the 25 and 28" AA5 sets a 110° panel is needed for E/W correction. This panel is allocated on the right hand side of the chassis (seen from the rear). The panel inclusive the bracket can be released from the heatsink by pulling it back. The panel itself can be taken out of the bracket by releasing the catching lips. To put the main carrier in the service position (see service manual), the 110° panel has to be released first and put aside of the main carrier. In this service information the description, the adjustments, the PWB and the spare parts list of 110° panel are published.

Description E/W panel 25" and 28" AA5 AB chassis (diagram C):

E/W correction is in this panel based on the diode-modulator principle. This panel consists of D6401-D6402-C2403 and C2404. By modulating the voltage on the cathode of D6402, the current through the horizontal deflection coil is modulated. As this is done by a parabolic-shaped voltage, E/W distortion is corrected. This parabolic-shaped voltage is derived from the sawtooth-shaped voltage of the frame deflection. This is done by transistor TS7403. E/W correction is adapted for 4/3 and 16/9 mode by Transistors TS7405 and TS7406. Coil 5401, R3402, R3423 and R3424 are for the linearity correction. R3402, R3423 and R3424 are for the linearity correction. D6404, R3403 and C2402 compensate the Mannheim effect.

Transformer 5402 takes care for optimal functioning of the diode-modulator. A too high beam-current influences the EHT-voltage and will in this way distortion the picture. This is corrected by feeding the beam-info to TS7402.

Adjustments:

- R3421 takes care for the vertical picture shift.
- R3411 is for adjusting the picture-width.
- R3413 is for correcting the E/W distortion.

3. Separate control panel AA5 AB chassis (diagram D)

The separate controls panel (diagram D) is allocated underneath the picture tube. To release the panel first the main carrier should be in its service position. After that the fixing screw of the bracket holding the separate control panel can be loosened. By then, the panel the separate control panel can be taken out of its bracket. In this service information the PWB and the spare parts list of the separate control panel is published.

Separate control panel is in functionality equal to the controls on the main carrier. The following selection table is valid:

1 speaker 16Ω	2 speakers 8Ω in series
1H34 - 2H34	1H34 - 3H34 speaker right 1H35 - 3H35 speaker left

4. Difference tables

Comparing the diagrams published in the AA5 AB service manual (4822 727 20783 ... 4822 727 20788) there are several value changes for the different screen sizes. This different values are published in the following difference tables.

NL

1. Nieuw chassis voor AA5-toestellen met 14"-15"-17"-21" mini neck (diameter hals 20 mm) en met 20"-25"-28" narrow neck (diameter hals 30 mm)

In AA5-toestellen met 14-15-17-21" mini neck en met 20"-25"-28" narrow neck met productiecode PM/QG 05 en hoger, wordt een nieuwe voeding geïntroduceerd. Deze nieuwe voeding is de SMPS-voeding van de AA5 AB, in plaats van de SOPS-voeding van de AA5 AA. Daardoor kan de AA5 AB service manual worden gebruikt (aan de achterkant van deze toestellen staat AA5 AB aangegeven) behalve voor sommige componentwaarden. Die andere componentwaarden en de

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Chassis (diagram D)

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AA5 AB service
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halve voor sommige
entwaarden en de

4822 727 20875

service codes ervan worden vermeld in deze service-
informatie. De PWB is dezelfde als in de AA5 AB service
manual.

Samengevat: Gebruik de AA5 AB service manual
(4822 727 20783 t/m 4822 727 20788
samen met deze service-informatie voor
AA5-toestellen met 14"-15"-17"-21"
minihals en 20"-25"-28" nauwe hals met
PM/QG code 05 en hoger.

2. 110° Oost/West correctiepaneel voor 25" en 28" AA5 AB chassis (schema C)

Voor de 25 en 28" AA5-toestellen is een 110° paneel nodig
voor O/W correctie. Dit paneel bevindt zich aan de rechter-
kant van het chassis (vanaf de achterkant gezien). Het pa-
neel kan samen met de beugel van het koellichaam worden
verwijderd door dit naar achteren te trekken. Het paneel zelf
kan uit de beugel worden genomen door de pallen los te
maken. Om de hoofddrager in service-positie te kunnen
zetten (zie service manual) moet eerst het 110° paneel
worden losgemaakt en naast de hoofddrager worden ge-
plaatst. Deze service-informatie bevat de beschrijving,
afregelingen, PWB en onderdelenlijst van het 110° paneel.

Beschrijving O/W paneel 25" en 28" AA5 AB chassis (schema C):

In dit paneel is de O/W correctie gebaseerd op het diode-
modulator principe. Het paneel bestaat uit D6401-D6402-
C2403 en C2404. Door de spanning op de kathode van
D6402 te moduleren, wordt de stroom door de horizontale
afbuigspoel gemoduleerd. Daar dit plaatsvindt door een
paraboolvormige spanning, wordt de O/W vervorming gecor-
rigeerd. Deze paraboolvormige spanning wordt afgeleid
van de zaagtand-vormige spanning van de rasterafbuiging.
Dit gebeurt door transistor TS7403. O/W correctie wordt
voor de 4/3 en 16/9 mode aangepast door transistoren
TS7405 en TS7406. Spoel 5401, R3402, R3423 en R3424
zijn voor de lineaire correctie. D6404, R3403 en C2402
compenseren het Mannheim-effect. Transformator 5402
zorgt ervoor dat de diode-modulator optimaal functioneert.
Een te hoge straalstroom heeft invloed op de EHT-spanning,
waardoor het beeld vervormd wordt. Dit wordt gecorrigeerd
door de straalinfo naar TS7402 te leiden.

Regelingen:

- R3421 zorgt voor de verticale beeldverschuiving.
- R3411 is voor het regelen van de beeldbreedte.
- R3413 is voor de O/W correctie.

3. Afzonderlijk bedieningspaneel AA5 AB chassis (schema D)

Het afzonderlijke bedieningspaneel (schema D) bevindt zich
onder de beeldbuis. Om het paneel los te maken moet de
hoofddrager zich eerst in service-positie bevinden. Daarna
kan de schroef van de beugel, waarin zich het afzonderlijke
regelpaneel bevindt, worden losgedraaid. Het afzonderlijke
regelpaneel kan dan uit de beugel worden verwijderd. Deze
service-informatie bevat de PWB en de lijst met reserve-
onderdelen van het afzonderlijke regelpaneel.

Het afzonderlijke regelpaneel functioneert op dezelfde
manier als de bedieningsknoppen op de hoofddrager. De
onderstaande selectietabel is van toepassing:

1 luidspreker 16Ω	2 luidsprekers 8Ω in serie geschakeld
1H34 - 2H34	1H34 - 3H34 rechter luidspreker 1H35 - 3H35 linker luidspreker

4. Verschillentabellen

Als men de in de AA5 AB service-manual (4822 727 20783
... 4822 727 20788) vermelde schema's vergelijkt, ziet men
verschillende waardeveranderingen voor de diverse
schermafmetingen. Deze verschillende waarden worden in
de volgende verschillentabellen weergegeven.

(D)

1. Neues Chassis für 14"-15"-17"-21"-Minipaß-AA5- Geräte (Halsdurchmesser 20 mm) und 20"-25"-28"- Schmalpaß-AA5-Geräte (Halsdurchmesser 30 mm)

Für 14"-15"-17"-21"-Minipaß- und 20"-25"-28"-Schmalpaß-
AA5-Geräte mit dem Produktionscode PM/QG 05 und höher
wird ein neues Netzteil eingeführt. Bei diesem neuen Netz-
teil handelt es sich um das SM-Netzteil des AA5 AB und nicht
mehr um das SOPS-Netzteil des AA5 AA. Hieraus folgt, daß
die AA5-AB-Service-Anleitung benutzt werden kann (an der
Rückseite dieser Geräte steht AA5 AB), mit Ausnahme der
Werte für einige Komponenten. Diese anderslautenden
Komponentenwerte und deren Service-Codes sind in diesen
Service-Informationen aufgeführt. Die gedruckte Schaltung
ist die Gleiche wie die in der AA5-AB-Service-Anleitung.

Zusammenfassung: Für 14"-15"-17"-21"-Minipaß- u.
20"-25"-28"-Schmalpaß-AA5-
Geräte mit dem Produktionscode
PM/QG 05 und höher sollte die
AA5-AB-Service-Anleitung (4822
727 20783 bis 4822 727 20788)
zusammen mit diesen Service-
Informationen verwendet werden.

2. 110°-OW-Korrektur-Platine für 25"- und 28"-AA5-AB- Chassis (Plan C)

Die 25"- und 28"-AA5-Geräte benötigen eine 110°-Platine
zur OW-Korrektur. Diese Platine befindet sich rechts vom
Chassis (von der Rückseite aus gesehen). Um die Platine
einschließlich des Trägers vom Kühlkörper zu lösen, wird
sie einfach nach hinten gezogen. Nach dem Lösen der
Schnapper kann dann die Platine selbst aus dem Träger
genommen werden. Um den Hauptträger in die Service-
Position zu bringen (siehe Service-Anleitung), muß zuvor
die 110°-Platine gelöst und neben den Hauptträger gelegt
werden. Diese Service-Informationen enthalten die Be-
schreibung, die Einstellungen, die gedruckte Schaltung u.
die Ersatzteilliste für die 110°-Platine.

Beschreibung der OW-Korrektur-Platine für 25"- und 28"-AA5-AB-Chassis (Plan C):

Die OW-Korrektur baut in dieser Platine auf dem Dioden-
Modulator-Prinzip auf. Diese Platine besteht aus D6401-
D6402-C2403 und C2404. Durch Modulation der Spannu-
ng an der Kathode von D6402 wird der Strom durch die Hor-
zontalablenkspeule moduliert. Da dies durch eine parab-
olförmige Spannung erfolgt, wird die OW-Verzerrung korrigiert.
Diese parabolförmige Spannung wird von der sägezahn-
förmigen Spannung der Teilbildablenkung abgeleitet, und
zwar über Transistor TS7403. Die Transistoren TS7405
und TS7406 passen die OW-Korrektur für den 4/3- und
16/9-Betrieb an. Spule 5401, R3402, R3423 und R3424
dienen zur Linearitätskorrektur. D6404, R3403 und C2402
kompensieren den Mannheim-Effekt. Trafo 5402 sorgt
dafür, daß der Dioden-Modulator optimal funktioniert. Ein
zu hoher Strahlstrom beeinflußt die Hochspannung und
verzerrt dadurch das Bild. Dies wird korrigiert, indem die
Strahl-Info an TS7402 angelegt wird.

Einstellungen:

- R3421 sorgt für die senkrechte Bildverschiebung.
- R3411 dient zum Einstellen der Bildbreite.
- R3413 dient zur Korrektur der OW-Verzerrung.

3. Gesonderte Steuerplatine für AA5-AB- Chassis (Plan D)

Die gesonderte Steuerplatine (Plan D) befindet sich unter
der Bildröhre. Um die Platine herauszunehmen, muß sich
zunächst einmal der Hauptträger in der Service-Position
befinden. Dann kann die Befestigungsschraube des Trägers
für die gesonderte Steuerplatine gelöst werden. Danach
kann die gesonderte Steuerplatine aus ihrem Träger her-
genommen werden. Diese Service-Informationen enthalten die ge-

druckte Schaltung und die Ersatzteilliste für die gesonderte Steuerplatine.

Die gesonderte Steuerplatine ist hinsichtlich ihrer Funktion mit dem Hauptträger vergleichbar. Es gilt folgende Auswahltablelle:

1 Lautsprecher 16Ω 1H34 - 2H34	2 Lautsprecher 8Ω, Serienschaltung 1H34 - 3H34 Lautsprecher, rechts 1H35 - 3H35 Lautsprecher, links
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4. Unterschied-Tabellen

Bei einem Vergleich der Pläne in der AA5-AB-Service-Anleitung (4822 727 20783 ... 4822 727 20788) fällt auf, daß sich einige Werte für die verschiedenen Bildschirm-Größen geändert haben. Die folgenden Unterschied-Tabellen zeigen diese unterschiedlichen Werte auf.

F

1. Nouveau châssis pour appareils AA5 à mini-col 14"-15"-17"-21" (diamètre de col 20 mm) et à col étroit 20"-25"-28" (diamètre de col 30 mm)

Une nouvelle alimentation est introduite pour les appareils AA5 à mini-col 14"-15"-17"-21" et à col étroit 20"-25"-28", munis de PM/QG code 05 et plus. Cette nouvelle alimentation est l'alimentation SMPS de l'AA5 AB au lieu de l'alimentation SOPS de l'AA5 AA. De ce fait, le manuel de service AA5 AB peut être utilisé (AA5 AB est indiqué à l'arrière de ces appareils) à l'exception de certaines valeurs de composants. Ces valeurs de composants différentes et ces codes de service sont mentionnés dans le présent document de service. La CCI est la même que celle du manuel de service AA5 AB.

Pour conclure: Pour les appareils AA5 à mini-col 14"-15"-17"-21" et à col étroit 20"-25"-28", munis de PM/QG code 05 et plus, utilisez le manuel de service AA5 AB (4822 727 20783 à 4822 727 20788 inclus) conjointement à ce document de service.

2. Platine de correction Est/Ouest 110° pour châssis AA5 AB 25" et 28" (schéma C)

Pour les appareils AA5 25" et 28", la correction E/O nécessite une platine 110°. Cette platine est située à droite du châssis (vu de derrière). La platine, console comprise, peut être dégagée radiateur en la tirant vers l'arrière. La platine elle-même peut être dégagée de la console en retirant les attaches. Pour mettre le support principal en position de service (voir manuel de service), la platine 110° doit être dégagée en premier et mise à l'écart du support principal. Ce manuel de service contient la description, les réglages, la CCI et la liste de pièces de la platine 110°.

Description de la platine E/O du châssis AA5 AB 25" et 28" (schéma C):

Dans cette platine, la correction E/O est basée sur le principe du modulateur à diode. Cette platine se compose de D6401-D6402-C2403 et C2404. En modulant la tension sur la cathode de D6402, le courant traversant la bobine de déviation horizontale est modulé. La distorsion E/O est corrigée dans la mesure où cette modulation est réalisée par une tension parabolique. Cette tension parabolique dérive d'une tension en dent de scie du balayage trame; laquelle est fournie par le transistor TS7403. La correction E/O est adaptée pour les modes 4/3 et 16/9 par les transistors TS7405 et TS7406. La bobine 5401, R3402, R3423 et R3424 sont destinés à la correction de la linéarité. D6404, R3403 et C2402 compensent l'effet de Mannheim. Le transformateur 5402 assure le fonctionnement optimal du modulateur à diode. Un courant de faisceau trop élevé influence la tension THT et provoque une distorsion de l'image. Cette distorsion est corrigée en acheminant un signal frein de faisceau vers TS7402.

Réglages:

- R3421 assure le déplacement vertical de l'image.
- R3411 est destiné au réglage de la largeur de l'image.
- R3413 est destiné à la correction de la distorsion E/O.

3. Platine de commande distincte du châssis AA5 AB (schéma D)

La platine de commande distincte (schéma D) est située sous le tube image. Pour dégager cette platine, le support principal doit être d'abord mis en position de service. On peut ensuite retirer la vis de fixation de la console qui supporte la platine de commande distincte. La platine de commande distincte peut alors être dégagée de sa console. Ce manuel de service contient des informations sur la CCI et la liste de pièces de la platine de commande distincte.

La platine de commande distincte assure les réglages présents sur le support principal. Les correspondances sont les suivantes:

1 haut-parleur 16Ω 1H34 - 2H34	2 haut-parleurs 8Ω, en série 1H34 - 3H34 haut-parleur de droite 1H35 - 3H35 haut-parleur de gauche
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4. Modifications

En comparaison aux schémas publiés dans le manuel de service AA5 AB (4822 727 20783 ... 4822 727 20788), il y a plusieurs modifications de valeurs pour les différentes tailles d'écran. Ces différentes valeurs sont publiées dans les paragraphes suivants.

I

1. Nuovo chassis per apparecchi AA5 da 14"-15"-17"-21" con mini neck (diametro del collo 20 mm) e da 20"-25"-28" con narrow neck (diametro del collo 30 mm)

Negli apparecchi AA5 da 14"-15"-17"-21" con mini neck e da 20"-25"-28" con narrow neck con codice di produzione a partire da PM/QG 05 è stato introdotto un nuovo alimentatore. Questo nuovo alimentatore è di tipo SMPS per AA5 AB, invece dell'alimentatore tipo SOPS per AA5 AA. Come risultato il manuale di servizio AA5 AB può essere usato (sul lato posteriore di questi apparecchi viene indicato AA5 AB) tranne che per i valori di alcuni componenti. Questi diversi valori dei componenti ed i codici di servizio vengono indicati nelle informazioni di servizio. Lo stampato è la stesso del manuale di servizio AA5 AB.

Per concludere: per gli apparecchi AA5 da 14"-15"-17"-21" con mini neck e da 20"-25"-28" con narrow neck con codice di produzione a partire da PM/QG 05 utilizzare il manuale di servizio AA5 AB (da 4822 727 20783 fino a 4822 727 20788 compreso) insieme alle informazioni di servizio.

2. Pannello di correzione Est/Ovest 110° per chassis AA5 AB da 25" e da 28" (diagramma C)

Per gli apparecchi AA5 da 25" e da 28" è necessario un pannello 110° per una correzione Est/Ovest. Questo pannello si trova sul lato destro dello chassis (visto da dietro). Per staccare il pannello, compreso il supporto, basta estrarlo. Il pannello stesso può essere staccato dal supporto allentando le alette di bloccaggio. Per posizionare il pannello principale nella posizione di servizio (si veda il manuale di servizio), deve essere prima rimosso il pannello 110°. In queste informazioni di servizio sono pubblicate la descrizione, le regolazioni, il circuito stampato e l'elenco delle parti di ricambio del pannello 110°.

Descrizione del pannello Est/Ovest dello chassis AA5 AB 25" e 28" (diagramma C):

La correzione Est/Ovest in questo pannello è basata sul principio del diodo modulatore. Questo pannello è costituito

da D6401 catodo di bobina di tuato da u Ovest vie deriva dal quadro. C zione Est, transistor e R3424 e C2402 e 5402 si o tore. Una EHT e, in retta invia

Regolazio
• R342
• R341
• R3413

3. Pannello (schéma D)

Il pannello pio. Per a principale allentare nello di co può essen di servizi di parti di ric

Il funziona valente al principale

1 altopa
1H34 - 2

4. Tabelle

Paragona AA5 AB (4 modifich Questi div delle diffe

E

1. Nuevo c de 14", 1 cuello es 30 mm).

En los apar y de cuell ción PM/QG fuente de la fuente c Conmutac Por consi AB (en la AB) excep diferentes correspon servicio. L manual de

Nota:

da D6401-D6402-C2403 e C2404. Modulando la tensione sul catodo di D6402 viene modulata la corrente attraverso la bobina di deflessione orizzontale. Poiché questo viene effettuato da una tensione a forma di parabola, la distorsione Est/Ovest viene corretta. Questa tensione a forma di parabola deriva dalla tensione a dente di sega della deflessione di quadro. Ciò viene effettuato dal transistor TS7403. La correzione Est/Ovest viene adattata per il modo 4:3 e 16:9 dai transistor TS7405 e TS7406. La bobina 5401, R3402, R3423 e R3424 sono per la correzione della linearità. D6404, D3403 e C2402 compensano l'effetto Mannheim. Il trasformatore 5402 si occupa del funzionamento ottimale del diodo modulatore. Una corrente del fascio troppo alta influenza la tensione EHT e, in questo modo, distorce l'immagine. Questa viene corretta inviando l'informazione della corrente di fascio a TS7402.

Regolazioni:

- R3421 si occupa dello shift verticale dell'immagine
- R3411 regola la larghezza dell'immagine
- R3413 corregge la distorsione Est/Ovest.

3. Pannello di controllo separato per telaio AA5 AB (schema D)

Il pannello di controllo (diagramma D) si trova sotto il cinescopio. Per allentare il pannello si deve mettere prima il pannello principale nella posizione di servizio. Dopo di che si può allentare la vite di fissaggio del supporto che blocca il pannello di controllo. Di seguito, il pannello di controllo separato può essere estratto dal suo supporto. In queste informazioni di servizio vengono pubblicate lo stampato e l'elenco delle parti di ricambio del pannello di controllo separato.

Il funzionamento del pannello di controllo separato è equivalente al funzionamento del controllo situato sul pannello principale. E' valida la seguente tabella di selezione:

1 altoparlante 16Ω 1H34 - 2H34	2 altoparlanti da 8Ω, in serie 1H34 - 3H34 altoparlante destro, 1H35 - 3H35 altoparlante sinistro
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4. Tabelle delle differenze

Paragonando il diagramma pubblicato nel manuale di servizio AA5 AB (4822 727 20783 ... 4822 727 20788) ci sono diverse modifiche di valore per le diverse dimensioni dello schermo. Questi diversi valori sono pubblicati nelle seguenti tabelle delle differenze.

E

1. Nuovo chasis para aparatos AA5 de cuello miniatura de 14", 15", 17" y 21" (diámetro cuello 20 mm) y de cuello estrecho de 20"-25"-28" (diámetro de cuello 30 mm).

En los aparatos AA5 de cuello miniatura de 14", 15", 17" y 21" y de cuello estrecho de 20"-25"-28" con el código de producción PM/QG 05 y superiores se ha introducido una nueva fuente de alimentación. Este nueva fuente de alimentación es la fuente de alimentación SMPS (Modo con Alimentación Conmutada) del AA5 AB, en lugar de la SMPS del AA5 AA. Por consiguiente, se puede usar el manual de servicio AA5 AB (en la parte trasera de estos aparatos, está indicado AA5 AB) excepto para algunos valores de componentes. Estos diferentes valores de componentes y sus códigos de servicio correspondientes están indicados en la información de servicio. La tarjeta de circuito impreso es idéntica a la del manual de servicio AA5 AB.

Nota: Para aparatos AA5 de cuello miniatura de 14", 15", 17" y 21" y de cuello estrecho de 20"-25"-28" con el código PM/QG 05 y superiores, utilizar el manual de servicio AA5 AB (4822 727 20783 hasta 4822 727 20788, ambos inclusive) junto con la presente información de servicio.

2. Panel de 110° para la corrección Este/Oeste para el chasis AA5 AB de 25" y 28" (esquema C)

Para los aparatos AA5 de 25" y 28" se necesita un panel de 110° para la corrección E/O. Este panel se encuentra en la parte derecha del mismo, visto por detrás del chasis. El panel con el soporte se puede soltar del disipador de calor, tirándolo hacia detrás. El panel mismo se saca del soporte aflojando las lengüetas. Antes de colocar el portador principal en la posición de servicio (ver el manual de servicio), aflojar primero el panel de 110° y ponerlo al lado del portador principal. La presente información de servicio recoge la descripción, los ajustes, la tarjeta de circuito impreso y la lista de componentes del panel de 110°.

Descripción del panel E/O de 25" y 28" del chasis AA5 AB (esquema C):

La corrección E/O en este panel está basada en el principio del modulador de diodos. Este panel consiste en D6401-D6402-C2403 y C2404. Al alterar la tensión en el cátodo de D6402, se altera asimismo la corriente que pasa por la bobina de deflexión horizontal. Como quiera que esta alteración es realizada por una tensión parabólica, se corrige la distorsión E/O. Esta tensión parabólica que es derivada de la tensión de diente de sierra de la deflexión vertical la realiza el transistor TS7403. La corrección este-oeste es adaptada para el modo 4/3 y 16/9 por los transistores TS7405 y TS7406. La bobina 5401 y las resistencias R3402, R3423 y R3424 cuidan de la corrección lineal. D6404, R3403 y C2402 compensan el efecto Mannheim. El transformador 5402 se encarga del funcionamiento óptimo del modulador de diodos. Una corriente del haz demasiado elevada influye la tensión extremadamente alta y deformará de esta manera la imagen. Este fenómeno se corrige, enviando la información del haz a TS7402.

Ajustes:

- R3421 cuida del desplazamiento de imagen vertical.
- R3411 es para el ajuste de la anchura de imagen.
- R3413 es para la corrección de la distorsión E/O.

3. Separado panel de mando del chasis AA5 AB (esquema D)

El panel separado de mando (esquema D) se encuentra debajo del tubo de imagen. Para aflojarlo, es necesario colocar el portador principal en su posición de servicio. El panel se afloja, destornillando el tornillo de fijación del soporte que sostiene al panel separado de mando. Ahora es posible sacar dicho panel de su soporte. La información de servicio recoge la tarjeta de circuito impreso y la lista de recambios del panel separado de mando.

La funcionalidad del panel separado de mando equivale a los mandos en el portador principal. La tabla de selección siguiente es válida:

1 altavoz 16Ω 1H34 - 2H34	2 altavoces 8Ω, en serie 1H34 - 3H34 altavoz derecho 1H35 - 3H35 altavoz izquierdo
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4. Diferencia entre tablas

Comparando el esquema reflejado en el manual de servicio AA5 AB (4822 727 20783 ... 4822 727 20788), se observan varios cambios de valores para los diferentes tamaños de pantalla. Estos diferentes valores están recogidos en las siguientes tablas de diferencias.

Diagram A1;

ITEM	14"-15"-17"	20" NN	21" MN	21" NN	25"-28"
2505	68µF	68µF	68µF	150µF	150µF
2534	1nF	1nF	1nF	1nF	10nF
2535	1n5	1n5	1n5	1n5	2n2
2540	390pF	390pF	390pF	220pF	220pF
2568	1n5	1n5	1n5	1n5	470pF
3506	30R	30R	30R	30R	22R
3536	27k	27k	27k	27k	39K
3539	10R	6R8	6R8	5R6	---
3540	R56	R56	R56	R47	R47
5550	60W	100W	60W	100W	TRANS.11
5567	NOT	NOT	NOT	YES	NOT
5568	YES	YES	YES	NOT	YES
+86V	100V	92.5V	92.5V	82V	148V

5568 (bead 100 MHz) is instead of jumper 9568 /
 5568 (Spule 100 MHz) an Stelle von Steckbrücke 9568 /
 5568 (bobine 100 MHz) au lieu du fil de connexion 9568

Diagram A3;

ITEM	14"	370KRB2 2-TC38	15"-17"	A48EEV 13X31	A48ECR 11X19	21"MN	21"NN	25"& 28"
1449	---	---	---	---	---	YES	YES	YES
2401	390pF	390pF	390pF	390pF	390pF	390pF	390pF	1nF
2404	1500µF	1500µF	3300µF	3300µF	3300µF	3300µF	3300µF	1500µF
2405	22µF	22µF	4µ7	4µ7	4µ7	4µ7	2µ2	6µ8
2445	1nF	1nF	1n2	820pF	470pF	820pF	1n5	1n2
2446	9n1	9n1	8n2	9n1	12nF	8n2	12nF	12nF
2450	560nF	270nF	330nF	560nF	560nF	560nF	680nF	680nF
2451	10µF	10µF	10µF	10µF	10µF	10µF	10µF	---
2453	470µF	470µF	330µF	330µF	330µF	330µF	470µF	470µF
2455	10nF	10nF	10nF	10nF	10nF	10nF	22nF	22nF
2456	100pF	100pF	100pF	100pF	100pF	100pF	100pF	1nF
2460	33nF	33nF	33nF	33nF	33nF	33nF	33nF	47nF
3401	3K9	3K9	3K9	2K2	2K2	2K2	1K	---
3403	4K7	4K7	4K7	5K6	5k6	4K7	10K	7K5
3404	2K	2K	2K7	2K	2K	4K3	4K7	4K3
3405	270R	220R	220R	180R	390R	330R	750R	150R
3406	12K	12K	12K	12K	12K	22K	22K	27K
3408	1K5	2K2	2K2	3K9	3K9	2K2	1K	---
3411	3R3	2R7	3R3	2R7	2R7	2R7	2R7	1R5
3412	3R3	2R7	2R7	2R2	2R2	2R2	2R2	1R5
3419	100R	100R	56R	100R	100R	100R	33R	1R2
3420	1K	1K	1K	560R	560R	910R	560R	1K
3421	39R	39R	39R	39R	39R	39R	27R	27R
3444	4K7	4K7	3K9	3K9	3K9	3K9	3K3	4K7
3449	1R	1R	1R	1R	1R	1R	---	---
3451	33K	33K	33K	33K	33K	33K	33K	---
3452	8R2	8R2	5R6	4R7	4R7	3R3	1R	1R
3454	---	1K	1K	1K	1K	1K	1K	---
3457	680K	680K	680K	680K	680K	680K	680K	100K
3460	39K	39K	47K	47K	47K	47K	47K	27K
3461	---	---	47K	47K	47K	47K	47K	56K
3462	---	---	100K	100K	100K	100K	100K	82K
3463	---	---	100K	100K	100K	100K	100K	82K
3464	---	---	82K	82K	82K	82K	62K	68K
3469	4R7	4R7	4R7	4R7	4R7	4R7	---	---
3470	8R2	8R2	8R2	4R7	4R7	8R2	8R2	8R2
5445	uS 4	uS 4	uS 4	uS 4	uS 4	uS 4	uSLOT S	LOT110
5446	47µH	47µH	47µH	47µH	47µH	47µH	33µH	33µH
5454	---	YES	YES	YES	YES	YES	YES	---
6451	BYD33D	BYD33D	BYD33D	BYD33D	BYD33D	BYD33D	BYD33D	---
6462	---	---	BAV21	BAV21	BAV21	BAV21	BAV21	BAV21
6463	---	---	BAV21	BAV21	BAV21	BAV21	BAV21	BAV21
7441	BC639	BC639	BC639	BC639	BC639	BC639	BC639	BF819
9401	---	---	---	---	---	---	JMP	JMP
9454	JMP	---	---	---	---	---	---	JMP
9463	JMP	JMP	---	---	---	---	---	---
9474	---	---	---	---	---	---	---	JMP

3469 is a safety resistor parallel to jumper 9401

/ 3469 ist ein mit Steckbrücke 9401
 parallelgeschalteter Sicherheitswiderstand

/ 3469 est une résistance de sécurité parallèle au fil de
 connexion 9401

3449 is a safety resistor parallel to fuse 1449

/ 3449 ist ein mit Schmelzsicherung 1449
 parallelgeschalteter Sicherheitswiderstand

/ 3449 est une résistance de sécurité parallèle au
 fusible 1449

9474 is a jumper parallel to C2450

/ 9474 ist eine mit C2450 parallelgeschaltete
 Steckbrücke

/ 9474 est un fil de connexion parallèle à C2450

Différentes tables

Diagram A4;

ITEM	14"-15"- 17"-21" MN	20" NN	21" NN	25" & 28"
3340	5M6	4M7	4M7	
3341	6M8	6M8	4M7	
9101	JMP	JMP	JMP	---

R3101 is a resistor parallel to jumper 9101 /
 R3029 ist ein mit Steckbrücke 6030 parallelgeschalteter Widerstand /
 R3029 est une résistance parallèle au fil de connexion 6030

Diagram A5;

ITEM	25" & 28"	OTHERS
3601	15K	10K
3602	3K3	8K2
3632	1K	1K

R3621 is only placed in 20"-21"NN sets.
 IC7600 TMP47C...V3.0 for non ATS
 TMP47C...V2.1 for ATS /
 R3621 ist nur in 20"-21"-NN-Geräten vorhanden.
 IC7600 TMP47C...V3,0 für Nicht-ATS
 TMP47C...V2,1 für ATS /
 R3621 est installée uniquement dans les appareils NN 20"-21"
 IC7600 TMP47C...V3.0 pour non ATS
 TMP47C...V2.1 pour ATS

Diagram A6;

ITEM	14"-15"- 17"	20" NN 21" MN	21" NN	25" & 28"
3001	56R	39R	18R	22R
3029	1K5	1K5	---	---

R3029 is a resistor parallel to diode 6030 /
 R3029 ist ein mit Diode 6030 parallelgeschalteter Widerstand /
 R3029 est une résistance parallèle à la diode 6030

Diagram A9;

ITEM	14"	370K RB22- TC38	15" 17"	20" NN	21" MN	21" NN
3740	1K5	1K5	1K2	1K2	1K2	1K2
3741	1K5	1K5	1K2	1K2	1K2	1K2
3742	1K5	1K5	1K2	1K2	1K2	1K2
3749	6R8	6R8	6R8	6R8	6R8	4R7
3781	15K	15K	8K2	8K2	8K2	8K2

25" & 28"
YES
1nF
1500µF
6µ8
1n2
12nF
680nF

470µF
22nF
1nF
47nF

7K5
4K3
150R
27K

1R5
1R5
1R2
1K
27R
4K7

1R

100K
27K
56K
82K
82K
68K

8R2
LOT110
33µH

BAV21
BAV21
BF819
JMP
JMP

JMP

Diagram B1;

ITEM	14"	15"-17" 21" MN
2204	390pF	330pF
2217	390pF	330pF
2230	390pF	330pF

Diagram B2;

ITEM	A48EEV 13X31	A48ECR 11X19	21"	25" & 28"
1236	T1A	T1A	T500mA	---
2212	330p	330p	330p	470p
2222	330p	330p	330p	470p
2232	330p	330p	270p	470p
3238	3K3	3K3	3K3	2K2
3265	1K2	1K2	1K2	1K8
3266	56R	56R	56R	82R
3267	12K	12K	12K	15K
3275	1K2	1K2	1K2	1K8
3277	12K	12K	12K	15K
3278	56R	56R	56R	82R
3283	390R	390R	390R	560R
3287	12K	12K	12K	15K
3301	---	---	4R7	---
3303	1K2	1K2	1K2	1K8
3304	56R	56R	56R	82R
3307	---	---	22R	---
5207	10µH	---	---	---
9207	---	YES	---	---

R3307 and R5207 are resistors parallel to jumper 9207 /
 R3307 und R5207 sind mit Steckbrücke 9207 parallelgeschaltete
 Widerstände /
 R3307 et R5207 sont des résistances parallèles au fil de connexion 9207

rité parallèle au fil de

rité parallèle au

allèle à C2450

GB

5. Different picture-tubes in Anubis A AC and AA5 20"

In Anubis A AC and chassis AA5 20" different picture-tubes are used: A48ECR11X19 and A48EEV13X31. There are several differences in components:

Special attention has to be taken by connecting the yoke because the connections are a slightly different.

NL

5. Verschillende beeldbuizen in Anubis A AC en AA5 20"

In Anubis A AC en chassis AA5 20" worden verschillende beeldbuizen gebruikt: A48ECR11X19 en A48EEV13X31. Er zijn meerdere verschillen in de componenten:

Speciale aandacht moet worden geschonken aan het correct aansluiten van het juk, omdat de aansluitingen enigszins verschillen.

D

5. Unterschiedliche Bildröhren für Anubis A AC und AA5 20"

Im Anubis A AC und Chassis AA5 20" werden unterschiedliche Bildröhren verwendet: A48ECR11X19 und A48EEV13X31. Es gibt mehrere Unterschiede hinsichtlich der Komponenten:

Besondere Aufmerksamkeit ist beim Anschließen des Jochs geboten, da die Anschlüsse geringfügig anders sind.

F

5. Différents tubes images dans l'Anubis A AC et AA5 20"

Dans le châssis Anubis A AC et AA5 20", différents tubes images sont employés: A48ECR11X19 et A48EEV13X31. Il y a plusieurs différences pour les composants:

Une attention particulière doit être prêtée lors de la connexion de la bobine de déviation car les connexions sont légèrement différentes.

I

5. Cinescopio diferente in Anubis A AC ed AA5 da 20"

Sull'Anubis A AC e nello chassis AA5 20" sono usati dei cinescopi diversi: A48ECR11X19 e A48EEV13X31. Ci sono diverse differenze fra i componenti:

Si deve fare particolare attenzione al collegamento del morsetto perché i collegamenti sono leggermente diversi.

E

5. Otros tubos de imagen en el Anubis A AC y chasis AA5 20"

En el Anubis A AC y chasis AA5 20" se han usado otros tubos de imagen, en concreto: A48ECR11X19 y A48EEV13X31. Hay algunas diferencias en los componentes:

En particular se debe dedicar atención a la conexión correcta del yugo, ya que estas conexiones se diferencian ligeramente.

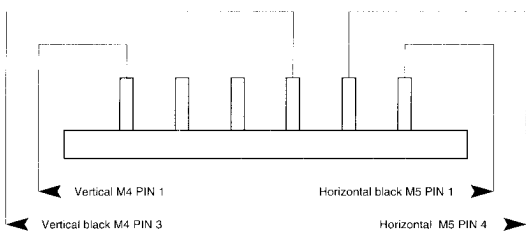
Anubis A AC:

ITEM	A48EEV13X31		A48ECR11X19	
2445	4822 126 13435	1n2 2KV	4822 126 13517	820pF 1KV
2446	4822 121 70649	9n1 1.6KV	4822 121 70434	11nF 1.6KV
2450	4822 121 70458	680nF 200V	4822 121 42442	560nF 200V
3401	4822 116 52259	2K4	4822 052 10202	2K
3403	4822 116 52266	3K	4822 116 52276	3K9
3405	4822 051 10181	180E	4822 051 10271	270E
3408	4822 053 10681	680E	4822 052 10122	1K2
5236	5322 157 53016	10μH	4822 157 71915	5.6μH

AA5 20":

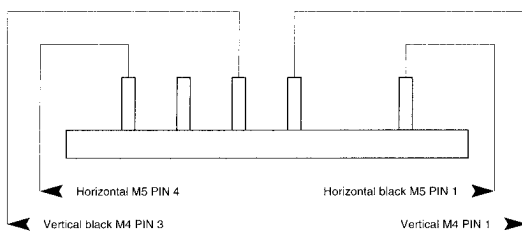
ITEM	A48EEV13X31		A48ECR11X19	
2445	4822 126 11503	820pF 2KV	4822 126 12267	470pF 2KV
2446	4822 121 70649	9n1 1.6KV	4822 121 70618	12nF 1.6KV
5236	4822 157 71736	10μH	----	
9207	----		present	

A 48 EEV 13x31



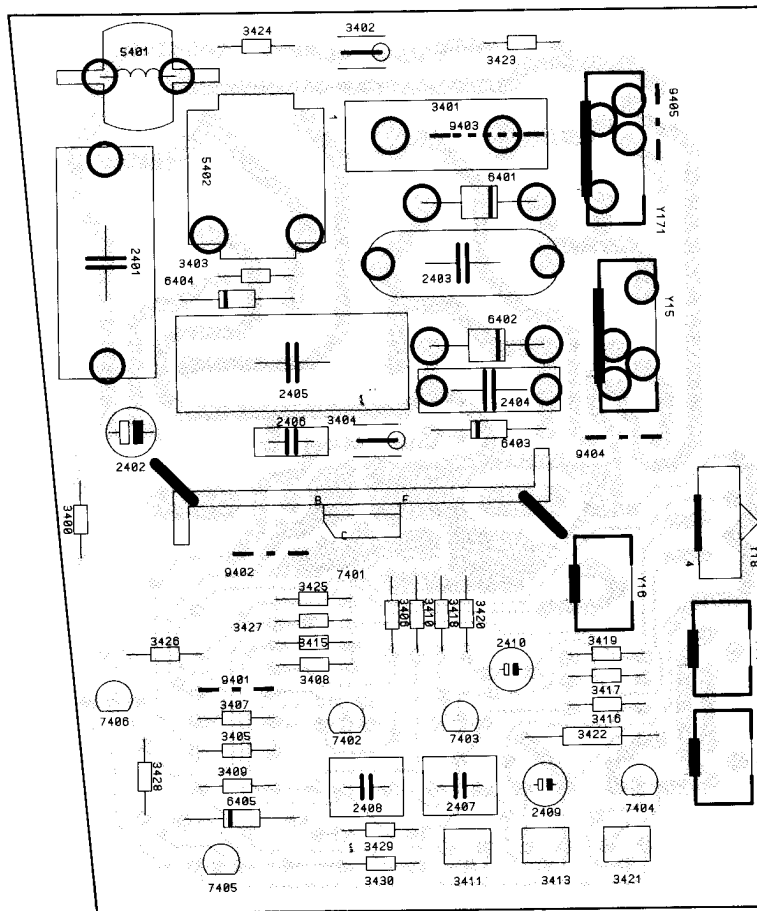
Looking from backside

A 48 ECR 11x19



Looking from backside

110° EW CORRECTION PANEL



RTV servis Horvat

Kešinci, 31402 Semeljci

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031-856-637

098-788-319

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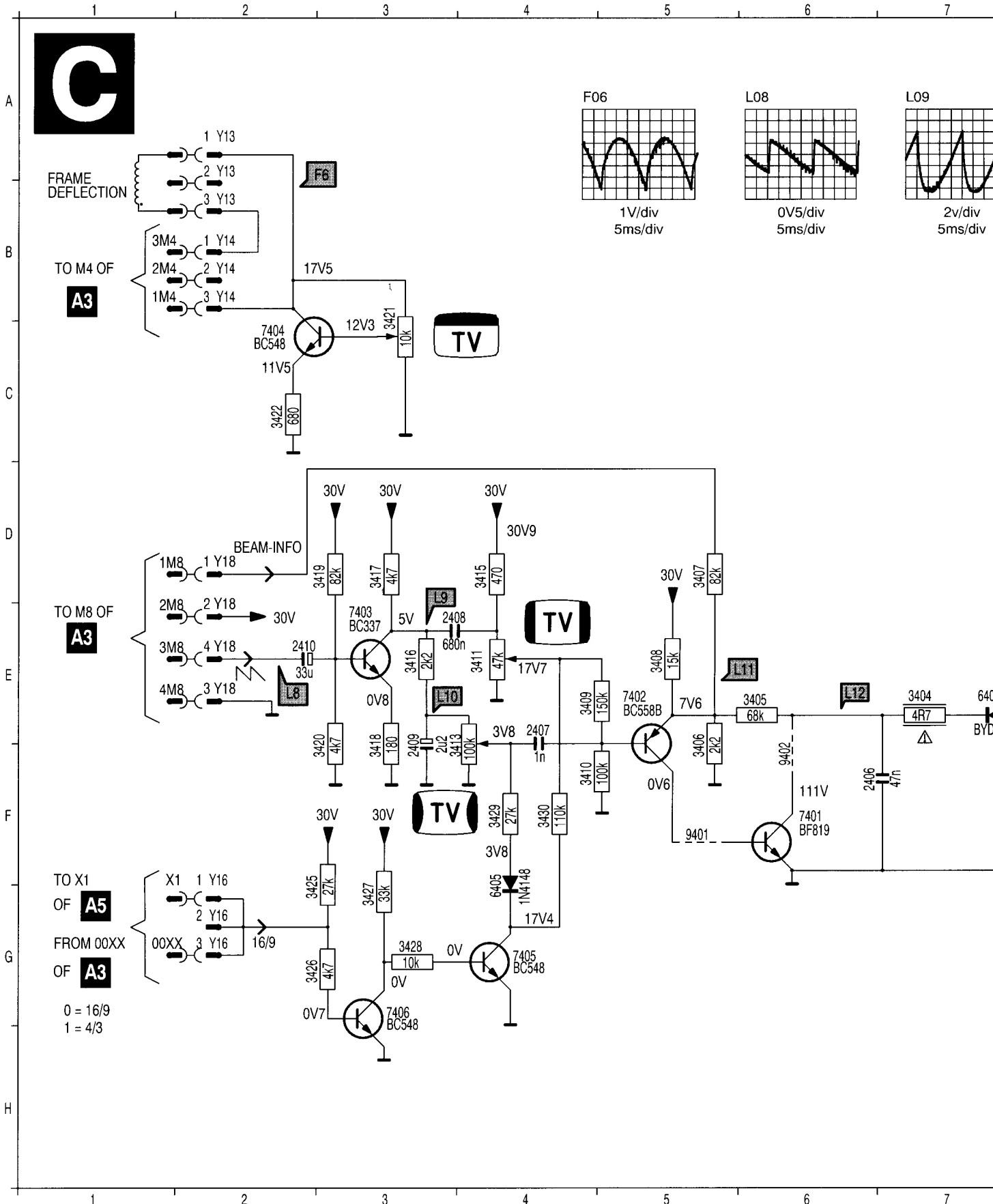
Croatia

110° EW correction panel /

AA5 95.01

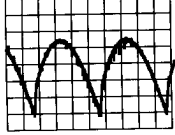
6

2401 E 9	2405 E 8	2409 E 4	3403 F 9	3407 D 6	3411 E 4	3417 D 3	3421 B 3	3425 F 3	3429 F 4	6401 E 8
2402 E10	2406 F 7	2410 E 3	3404 F 7	3408 E 5	3413 F 4	3418 E 3	3422 C 3	3426 G 3	3430 F 4	6402 F 8
2403 E 8	2407 E 4	3401 E12	3405 F 6	3409 E 5	3415 D 4	3419 D 3	3423 E11	3427 G 3	5401 D 9	6403 E 8
2404 F 8	2408 E 4	3402 E10	3406 E 6	3410 F 5	3416 E 3	3420 E 3	3424 E11	3428 G 3	5402 F 9	6404 E 9



3407 D 6	3411 E 4	3417 D 3	3421 B 3	3425 F 3	3429 F 4	6401 E 8	6405 F 4	7404 B 3	9402 F 6	Y13 A 2	Y14 B 2
3408 F 5	3413 E 4	3418 E 3	3422 C 3	3426 G 3	3430 F 4	6402 F 8	7401 F 6	7405 G 4	9403 E 11	Y13 A 2	Y14 B 2
3409 F 5	3415 D 4	3419 D 3	3423 E 11	3427 G 3	5401 D 9	6403 F 8	7402 F 5	7406 G 3	9404 F 12	Y13 A 2	Y15 G 1
3410 F 5	3416 E 3	3420 E 3	3424 E 11	3428 G 3	5402 F 9	6404 E 9	7403 F 3	9401 F 6	9405 D 12	Y14 B 2	Y15 G 1

F06



1V/div
5ms/div

L08



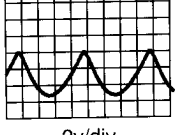
0V5/div
5ms/div

L09



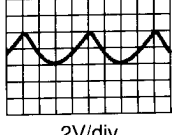
2v/div
5ms/div

L10



2v/div
5ms/div

L11

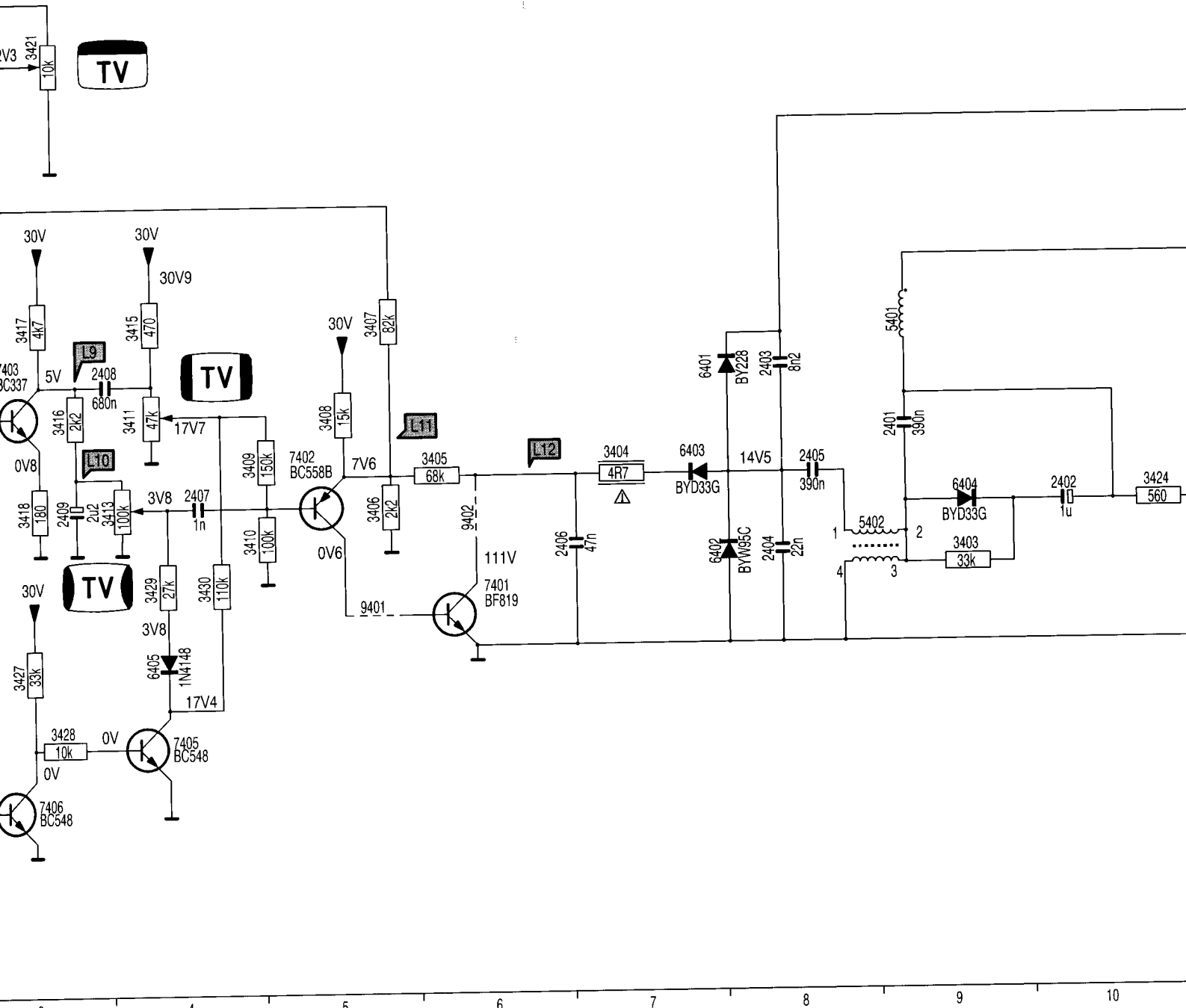


2V/div
5ms/div

L12



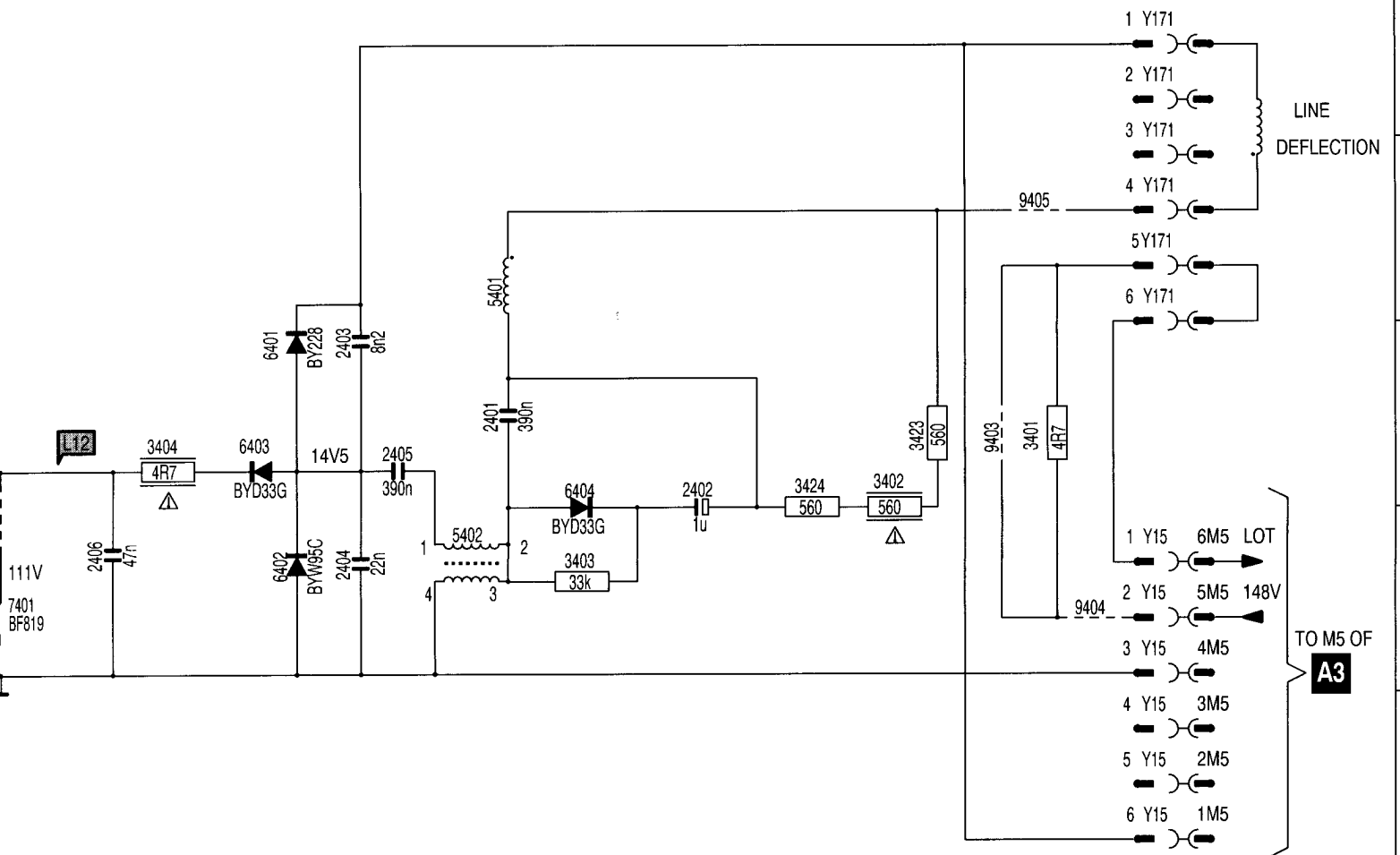
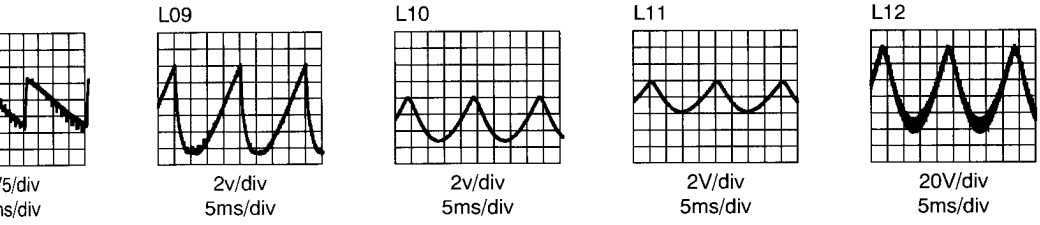
20V/div
5ms/div



110°-OW-Korrektur-Platine / Platine de correction E/O 110°

F 3	3429	F 4	6401	F 8	6405	F 4	7404	B 3	9402	F 6	Y13	A 2	Y14	B 2	Y15	F12	Y16	G 2	Y18	E 2	Y171	D12
G 3	3430	F 4	6402	F 8	7401	F 6	7405	G 4	9403	E11	Y13	A 2	Y14	B 2	Y15	F12	Y16	G 2	Y18	E 2	Y171	D12
G 3	5401	D 9	6403	F 8	7402	E 5	7406	G 3	9404	F12	Y13	A 2	Y15	G12	Y15	G12	Y16	F 2	Y18	D 2	Y171	C12
G 3	5402	F 9	6404	F 9	7403	E 3	9401	F 6	9405	D12	Y14	B 2	Y15	G12	Y15	F12	Y18	E 2	Y171	D12	Y171	C12

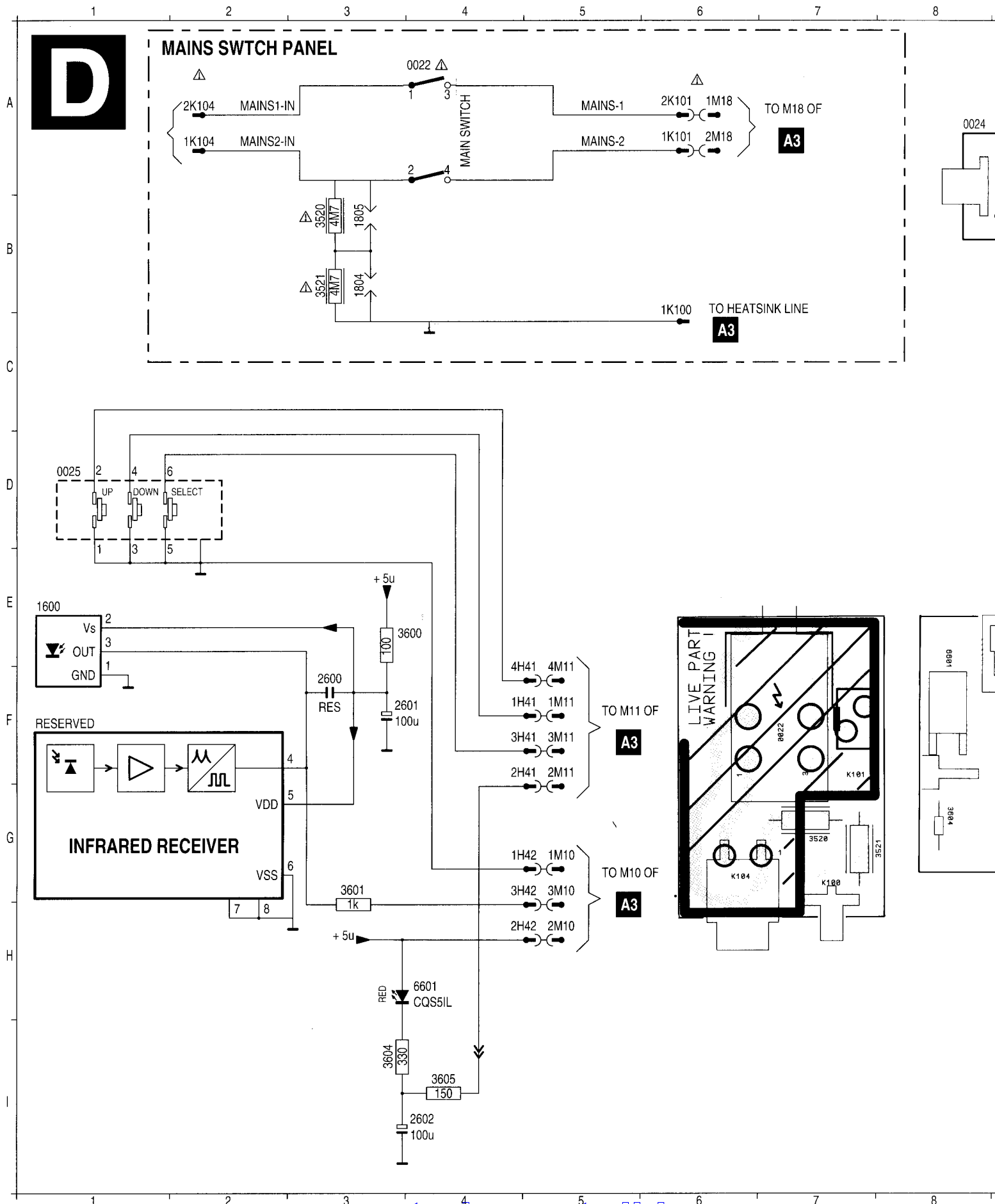
6 | 7 | 8 | 9 | 10 | 11 | 12 | 13



CHASSIS AA 5

SCHEMA C.EPS
121095

6 | 7 | 8 | 9 | 10 | 11 | 12 | 13



Diff table spares

Various

1236▲	4822 052 10108	1R00 5% 0,33W
1236▲	4822 071 51002	Fuse 1A T
1236	4822 071 55001	Fuse 500 mA T
1449▲	4822 071 54001	Fuse 400 mA T

—|—

2018	5322 122 32661	56pF 5% 50V
2123	4822 122 31727	470pF 2% 63V
2133	4822 122 31644	2n2 10% 63V
2197	4822 126 12944	47nF 10% 50V
2198	4822 126 12944	47nF 10% 50V
2204	4822 122 33805	330pF 10% 63V
2204	4822 126 10702	390pF 10% 63V
2212	4822 122 33805	330pF 10% 63V
2212	5322 122 34099	470pF 10% 63V
2217	4822 122 33805	330pF 10% 63V

2217	4822 126 10702	390pF 10% 63V
2222	4822 122 33805	330pF 10% 63V
2222	5322 122 34099	470pF 10% 63V
2230	4822 122 33805	330pF 10% 63V
2230	4822 126 10702	390pF 10% 63V
2232	4822 122 33805	330pF 10% 63V
2232	5322 122 34099	470pF 10% 63V
2401▲	4822 122 33172	390pF 5% 50V
2401▲	5322 122 34123	1nF 10% 50V
2404	4822 124 40432	1500µF 20% 25V

2404	4822 124 40785	3300µF 20% 25V
2404	4822 124 81304	1500µF 20% 35V
2405	4822 124 40769	4.7µF 20% 100V
2405	4822 124 40772	6.8µF 20% 100V
2405	4822 124 41596	22µF 20% 50V
2405	4822 124 40763	2n2 20% 100V
2445▲	4822 126 11503	820pF 10% 2kV
2445▲	4822 126 12267	470pF 10%R (HR) 2kV
2445▲	4822 126 13435	1.2nF 10% 2kV
2445▲	4822 126 13449	1nF 10% 2kV

2445▲	4822 126 72274	1n5 10% 2kV
2446▲	4822 121 70618	12nF 5% 1600V
2446▲	4822 121 70637	8.2nF 5% 1600V
2446▲	4822 121 70649	9.1nF 5% 1.6kV
2450▲	4822 121 42365	330nF 5% 250V
2450▲	4822 121 42634	560nF 5% 250V
2450▲	4822 121 70711	0.47µF 5% 250V
2450▲	5322 121 44128	680nF 5% 250V
2451	4822 124 42127	10µF 5% 100V
2453	4822 124 41334	470µF 20% 35V

2453	4822 124 41859	330µF 20% 35V
2455	4822 121 42004	10nF 10% 400V
2455	4822 121 41922	22nF 10% 250V
2456▲	5322 122 32531	100pF 5% 50V
2456▲	5322 122 34123	1nF 10% 50V
2460	4822 121 40525	47nF 10% 100V
2460	4822 121 51385	33nF 20% 100V
2505▲	4822 124 42104	68µF 20% 385V
2505▲	4822 157 71702	150µF 20% 385V
2534	4822 121 41857	10nF 5% 250V

2534	4822 122 33302	1nF 5% 50V
2535	4822 121 51096	1.5nF 50V
2535	4822 122 33531	2n2 10% 50V
2540▲	4822 126 13337	220pF 10% 1kV
2568▲	4822 126 12267	470pF 10%R (HR) 2kV
2568▲	4822 126 12274	1500pF 10%R (HR) 2kV
2706▲	4822 124 41579	10µF 20% 50V

□

3001▲	4822 052 10629	56Ω 5% 0.33W
3001▲	4822 052 10399	39Ω 5% 0.33W
3001▲	4822 052 10229	22Ω 5% 0.33W
3005	4822 051 10102	1k 2% 0.25W
3029	4822 051 10152	1k5 2% 0.25W
3158	4822 051 20103	10k 5% 0.1W
3198	4822 050 26808	62Ω 1% 0.6W
3238	4822 051 20222	2k2 5% 0.1W
3238	4822 051 20332	3k3 5% 0.1W
3265	4822 116 52207	1k2 5% 0.5W

3265	4822 116 52249	1k8 5% 0.5W
3266	4822 116 52197	56Ω 5% 0.5W
3266	4822 116 52202	82Ω 5% 0.5W
3267▲	4822 053 12123	12k 5% 3W
3267▲	4822 053 12153	15k 5% 3W
3275	4822 116 52207	1k2 5% 0.5W
3275	4822 116 52249	1k8 5% 0.5W
3277▲	4822 053 12123	12k 5% 3W
3277▲	4822 053 12153	15k 5% 3W
3278	4822 116 52197	56Ω 5% 0.5W

3278	4822 116 52202	82Ω 5% 0.5W
3283	4822 116 52222	390Ω 5% 0.5W
3283	4822 116 52226	560Ω 5% 0.5W
3287▲	4822 053 12123	12k 5% 3W
3287▲	4822 053 12153	15k 5% 3W
3301	5322 157 51687	COIL 39H
3301	4822 053 11478	4R7 5% 2W
3303	4822 116 52207	1k2 5% 0.5W
3303	4822 116 52249	1k8 5% 0.5W
3304	4822 116 52197	56Ω 5% 0.5W

3304	4822 116 52202	82Ω 5% 0.5W
3307	4822 116 52186	22R 5% 0.5W
3340	4822 051 20475	4M7 5% 0.1W
3340	4822 051 20565	5M6 5% 0.1W
3341	4822 051 20475	4M7 5% 0.1W
3341	4822 051 20685	6M8 5% 0.1W
3401▲	4822 052 10222	2k2 5% 0.33W
3401▲	4822 052 10392	3k9 5% 0.33W
3401▲	4822 117 11824	2k2 5% 0.33W
3401▲	4822 052 11102	1k 5% 0.33W

3403	4822 116 52283	4k7 5% 0.5W
3403	4822 116 52289	5k6 5% 0.5W
3403	4822 116 52299	7k5 5% 0.5W
3403	4822 116 83864	10k 5% 0.5W
3404	4822 051 20202	2k 5% 0.1W
3404	4822 051 20272	2k2 5% 0.1W
3404	4822 051 20430	4k3 5% 0.1W
3404	4822 051 20472	4k7 5% 0.1W
3405	4822 051 20151	150Ω 5% 0.1W
3405	4822 051 20181	180Ω 5% 0.1W

3405	4822 051 20221	220Ω 5% 0.1W
3405	4822 051 20271	270Ω 5% 0.1W
3405	4822 051 20331	330Ω 5% 0.1W
3405	4822 051 20391	390Ω 5% 0.1W
3405	4822 051 20751	750Ω 5% 0.1W
3406	4822 051 20223	22k 5% 0.1W
3406	4822 051 20273	27k 5% 0.1W
3406	4822 117 11383	12k 1% 0.1W
3408▲	4822 052 10222	2k2 5% 0.33W
3408▲	4822 052 10392	3k9 5% 0.33W

3408▲	4822 052 11152	1k5 5% 0.5W
3408▲	4822 053 10681	680Ω 5% 1W
3408▲	4822 052 11102	1k 5% 0.5W
3411▲	4822 052 10158	195 5% 0.33W
3411▲	4822 052 10278	297 5% 0.33W
3411▲	4822 052 10338	333 5% 0.33W
3412▲	4822 052 10228	292 5% 0.33W
3412▲	4822 052 10278	297 5% 0.33W
3412▲	4822 052 10338	333 5% 0.33W
3412▲	4822 052 10168	1R5 5% 0.33W

3419	4822 051 20101	100Ω 5% 0.1W
3419	4822 051 20122	1k2 5% 0.1W
3419	4822 051 20151	150Ω 5% 0.1W
3419	4822 051 20569	56Ω 5% 0.1W
3419	4822 051 20339	33R 5% 0.1W
3419	4822 021 20122	1R2 5% 3W
3420▲	4822 053 11102	1k 5% 2W
3420▲	4822 053 11561	560Ω 5% 2W
3420▲	4822 117 10483	910Ω 5% 2W
3421▲	4822 053 12279	27Ω 5% 3W

3421▲	4822 053 12399	39Ω 5% 3W
3444	4822 053 12392	3k9 5% 3W
3444	4822 053 12472	4k7 5% 3W
3444	4822 053 12332	3k3 5% 3W
3449▲	4822 052 10108	19 5% 0.33W
3451	4822 116 52271	33k 5% 0.5W
3452▲	4822 052 10108	19 5% 0.33W
3452▲	4822 052 10338	3303 5% 0.33W
3452▲	4822 052 10478	497 5% 0.33W
3452▲	4822 052 10568	5626 5% 0.33W

3452▲	4822 052 10828	802 5% 0.33W
3454▲	4822 052 11102	1k 5% 0.5W
3457	4822 051 20104	100k 5% 0.1W
3457	4822 051 20684	680k 5% 0.1W
3460	4822 051 20273	27k 5% 0.1W
3460	4822 051 20333	33k 5% 0.1W
3460	4822 051 20393	39k 5% 0.1W
3460	4822 051 20473	47k 5% 0.1W
3461	4822 051 20473	47k 5% 0.1W
3461	4822 051 20563	56k 5% 0.1W

3462	4822 051 20104	100k 5% 0.1W
3462	4822 117 11149	82k 1% 0.1W
3463	4822 051 20104	100k 5% 0.1W
3463	4822 117 11149	82k 1% 0.1W
3464	4822 051 20683	68k 5% 0.1W
3464	4822 117 11149	82k 1% 0.1W
3464	4822 117 11158	62k 1% 0.1W
3469▲	4822 052 10478	4Ω7 5% 0.33W
3470▲	4822 052 10478	4Ω7 5% 0.33W
3470▲	4822 052 10828	802 5% 0.33W

3506▲	4822 116 40137	PTC 36Ω 365V
3506▲	4822 116 40282	PTC 22Ω 276V
3536	4822 116 52264	27k 5% 0.5W
3536	4822 116 83882	39k 5% 0.5W
3539	4822 050 26808	62Ω 1% 0.6W

3539	4822 116 52176	10Ω 5% 0.5W
3539	4822 050 15608	5R6 1% 0.4W
3540	4822 117 11791	47Ω 5% 3W
3540	4822 117 11968	OR56 5% 3W
3540	4822 117 11791	OR47 5% 3W

3551	4822 051 30331	330Ω 5% 0.062W
3566	4822 116 52303	8k2 5% 0.5W
3601	4822 116 83864	10k 5% 0.5W
3601	4822 117 11973	15k 5% 1W
3602	4822 116 52303	8k2 5% 0.5W
3602	4822 116 52269	3k3 5% 0.33W
3621	4822 051 10223	22k 2% 0.25W
3632	4822 051 10102	1k 2% 0.25W
3740	4822 051 20122	1k2 5% 0.1W
3740	4822 117 11139	1k5 1% 0.1W

3741	4822 051 20122	1k2 5% 0.1W
3741	4822 117 11139	1k5 1% 0.1W
3742	4822 051 20122	1k2 5% 0.1W
3742	4822 117 11139	1k5 1% 0.1W
3749▲	4822 050 24708	4R7 1% 1/6W
3749▲	4822 050 26808	62Ω 1% 0.6W
3749▲	4822 053 10159	15Ω 5% 1W
3781	4822 051 10153	15k 2% 0.25W
3781	4822 051 10822	8k2 2% 0.25W

5207	4822 157 71736	Coil 10µH
5236	4822 157 71915	Coil 5µH6
5236	4822 157 53016	Coil 10µH
5443	4822 157 71387	100 MHz
5445▲	4822 140 10406	LOT uS 4
5445▲	4822 140 10544	LOT uSLOT S
5445▲	4822 140 10543	LOT LOT110
5446	4822 157 10303	33µH 5%
5446	4822 157 71519	47µH 5%
5550	4822 148 81439	Transformer 11

5550	4822 148 81441	Transformer 100W
5550	4822 146 10343	Transformer 60W
5551	4822 157 71387	100 MHz
5568	4822 157 71521	200 MHz

6451	4822 130 42488	BYD33D
6462	4822 130 30842	BAV21
6463	4822 130 30842	BAV21

7441	4822 130 41053	BC639
7441	4822 130 42159	BF819

2401▲	4822 121 40479	390nF 10% 250V
2402	4822 124 81319	1µF 20% 160V
2403	4822 122 50118	8n2 5% 2kV
2404▲	4822 121 40488	22nF 10% 400V